Another Record-Breaking Year for Business!

DURING the spring and early summer months of this year, the predictions were very freely made that 1926 was going to be a hard year for business.

The real estate booms in several parts of the country quieted down and flattened out. The bears on the stock market conducted a sustained drive and values declined somewhat drastically. A string of weak banks "busted" down in Georgia. Then the farmers were alleged to have a bad case of the dumps, and dire were the consequences to business in general, so the chronic pessimists claimed.

But, how come? Where are the disasters which all the ill-omened birds predicted?

Well, here it is, the week following Labor Day! Summer, the straw-hat season, has gone. Fall, the felt hat season, has come. Eight months of the year have passed into history.

How do we stand?

The Florida land is all there. None of it was lost in the deflation, only a lot of paper profits and fictitious value were reduced. They are growing more oranges, grapefruit, tangerines, pineapples, watermelons and early garden vegetables than ever. More people than formerly are making good money in regular lines of business. The State is sound financially; the people as a whole are prosperous; and the business map shows that business is good. The Florida real estate deflation was but a small pimple of irritation on the business body.

The bear raid in Wall Street turned out to be a "dud." After selling largely stocks which they did not own, the bears were obliged to buy them back at advancing figures, and the raid turned out to be a boomerang upon the raiders.

The sound stocks of all American corporations are earning good dividends and then some. Record-breaking earnings, such as shown by General Motors and the U. S. Steel, added discomfort to the short selling fraternity and brought despair to the long-haired croakers. American business can't be beaten down either by professional short sellers, nor talked down by chronic pessimists.

And then the alleged case of the dumps the farmers were said to have annexed. Well, there is a lot to be said of anyone who has had to stand and take his deflation, whether he be farmer or business man. And it should be borne in mind that farming is nothing but fundamental business.

The case of the farmer can be stated in a few words; it is the result of a "reaction from a giant speculation in real estate. It can't be cured by law." There is no legislative remedy for a busted boom in land speculation in Florida, Iowa, North Dakota or any other commonwealth. Time for adjustment is the prime necessity.

But from the manner in which the farmers have been buying merchandise, as gleaned from the reports of mail order houses, and from the way in which farmers have been liquidating their debts, the clear indication is that they are working out fairly satisfactory.

Yes, the autumn season for business, industry and agriculture began auspiciously. Here's a clinching set of statistics: For the week ending August 28th, the revenue freight carloadings were 1,136,233 cars—which was 11,795 cars more than for the corresponding week in 1925, and 47,442 more cars than for the week ending August 21st.

1,136,233 loaded cars during the week of August 28th, 1926, set another record breaker. Never before in this country has this figure been equaled. The highest previous carloading record was the week of August 29, 1925, with 1,124,438 cars.

Yet there are no heavy inventories anywhere in spite of the fact that for fourteen consecutive weeks the carloadings have run over the million mark.

Merchants' stocks of goods are light; construction operations are on a high plane; money is plentiful; credit is abundant; the leading American corporations have all regained public confidence. With good corporations, making good products, under good management, with good credit and reputations, possessing good cash reserves, the results can only be good earnings.

We said a year ago that 1925 would turn out to be a profitable year as a whole, and that 1926 would be as good. We rise to amend that statement by saying that 1926 will be much better than 1925.

Goodrich "1788 Highflex" Belt

Look for the diagonal red bar trademark... the square-edge construction ... the red sides ...

A new belt built on a new principle

No folds; no seams.
Equal pull clear across the belt.
Straight running.
Perfect uniformity in thickness and strength.
Plies free to bend without binding.
Maximum flexibility.
Less stretch.
Greater resistance to clamps and lacings.
We invite you to investigate Goodrich "1788 Highflex"—it is a veritable sensation in performance and economy.

Made in 4-5-6 and 8 ply

THE B. F. GOODRICH RUBBER COMPANY
Established 1870 Akron, Ohio

Observations of a Traveler

Development of Research Work in Paper Manufacture

THERE has been an extraordinary development of interest in pulp and paper research both in the United States and Canada during the past ten years. Readers of THE PAPER INDUSTRY are aware of the great co-operative project of the Canadian Pulp and Paper Association, the Dominion government and McGill University whereby fundamental research work in pulp and paper manufacture is to be prosecuted vigorously henceforth. The Canadian Pulp and Paper Association is committeed to an expenditure of $50,000 during the current year for laboratory construction and development, including also a direct contribution of $7,500 to aid in maintaining the recently established chair of Industrial and Cellulose Chemistry at McGill University.

In support of research work in the field of pulp and paper, the Dominion government appropriates annually for use by the Canadian Forest Products Laboratories the sum of $35,000. In this connection it may be well to refer to the reference made by President Wilson of the American Paper and Pulp Association at the forty-ninth annual meeting in New York last February, which will be found reproduced in THE PAPER INDUSTRY for March, 1926. There the significance of research and experiment in the developing of new raw materials is pointed out; and in Professor Wise's account of pulp and paper research work at McGill University, which was published in the August issue of THE PAPER INDUSTRY, various phases of the great co-operative experiment at Montreal are touched upon and a forecast made of the probable character of the problems that are likely to be investigated.

In a recent tour of paper mill districts, which included a stop at Erie, Pa., to attend a gathering of the executives of paper houses who distribute the products of the Hammermill Paper Company, the subject of pulp and paper research was discussed on several occasions with Dr. Bjarne Johnsen, Director of the Hammermill Laboratories. It was interesting to learn that the Hammermill Paper Company has found it necessary on account of the extension of process-control work as well as fundamental research in pulp and paper problems to construct a new laboratory building, which is expected to be ready for occupancy next January. The sum of $160,000 has been set aside by the company for this purpose.

Hammermill's New Laboratory

There are only a few large concerns in the pulp and paper industry who maintain laboratories for the prosecution of practical research and fundamental scientific research, the one line of work being concerned with the study of processes with a view of determining how savings can be effected in the various stages of manufacture, and the other with studies on the nature of wood or similar raw materials, the constitution of cellulose, and cooking conditions affecting the character of pulp. Practical research is only another name for the technical control which functioned not so long ago as a check on the different mill departments, but which is now regarded as an essential aid in manufacture instead of a mere appendage to the system as formerly.

The chemical control department of the Hammermill organization has grown from a small number of men to a staff of forty people, and there are other pulp and paper manufacturing firms in the United States and Canada which also employ fair-sized staffs of trained chemists and research workers. Some of these firms, like the Hammermill Paper Company, have deemed it to their best interests to support university fellowships, either for the study of raw materials and the processes in which these raw materials are used, or for investigations of the yield and quality of pulp as influenced by cooking conditions, to say nothing of the subsequent reactions of such pulps to bleaching and sizing.

University Fellowships

At Yale University, the oxidation of cellulose, which is a step in the bleaching process, was studied by Parsons, and at Syracuse University the sizing process was taken up for investigation and report by Kassing. The Northwest Paper Company and allied companies maintain paper fellowships at the University of Minnesota, a circumstance which in itself predicates the employment of a large staff of research workers, who it may be presumed are occupying themselves with problems relating to the development of new uses for pulp and paper as well as experimental work of a practical nature. Other firms like the Brown Company, Kimberly-Clark Company and Bogalusa Paper Company in the United States, and the Abitibi Power & Paper Company, The Riordon Company and The Lincoln Mills in Canada have gone in extensively for research investigation on their own account. It is not every mill, however, that can afford to do this, since it requires much added equipment which may result in the overhead expense being too high for the tonnage produced at a given mill. Hence, the necessity for national institutions of research in pulp and paper such as the one sponsored at McGill University by the Canadian Pulp and Paper Association.

In an effort to make clear to us the distinction be-

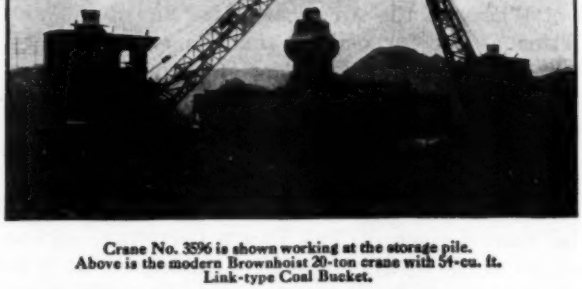
Economical Coal Handlers

This Company Owns 18

Sixteen years ago a central station in one of the big Great Lakes cities made an investigation of different coal handling methods before they bought their first Brownhoist—Crane No. 3596. Today they operate 18 Brownhoists, all 8-wheel steam cranes.

These cranes have handled millions of tons of coal, besides excavating for new plants, driving and pulling piles, handling heavy loads by hook block and a great amount of switching.

Ever since 1910 this user has proved the rugged strength, long life and economy of Brownhoists. They know cranes because they have a much better opportunity to study and test them than most companies.



Crane No. 3596 is shown working at the storage pile. Above is the modern Brownhoist 20-ton crane with 54-cu. ft. Link-type Coal Bucket.

And they rely on their Brownhoists because they have made good.

Why don't you, too, make an investigation of your handling costs, remembering that this big user has put his stamp of approval on Brownhoists and that there is a Brownhoist to suit every need? We shall be glad to cooperate with you.

The Brown Hoisting Machinery Co., *Cleveland, Ohio*

Branch Offices: New York, Chicago, Pittsburgh, San Francisco, New Orleans.

BROWNHOIST

GOOD MATERIAL HANDLING MACHINERY

tween fundamental research and practical research, the director of the Hammermill laboratories said that while practical research as represented by process control might and usually did lead to the introduction of new and more efficient equipment, which made for a considerable reduction in waste of expensive raw material, as well as the development of a high quality of product, there was need for research of a more fundamental character; there were still varieties in quality at the different stages of manufacture that could not be satisfactorily explained until more scientific methods were devised that would express more sharply the condition of the cellulose and the nature of the so-called impurities. These alleged impurities consist usually of residual compounds from the raw materials, degradation products of these compounds or of cellulose. The value or detriment of the presence of these substances in subsequent manufacturing processes was a proper subject of study and the solution of problems connected with them was the function of fundamental research work.

Need for Fundamental Research

In regard to practical research work, Doctor Johnsen remarked that each mill had its own individual problems to study. There was work to do on the prevention of slime formation in pipes as well as on fiber reclamation and the returning of waste to the place where it was lost; problems of this kind varied in different mills. In a soda pulp mill the chief problem was the recovery of chemicals, and in a sulphite mill the recovery of waste liquors was the predominant question, and a problem common to all mills was the elimination of waste.

Practical Research

A strong argument in favor of scientific supervision of manufacturing processes in American pulp and paper plants was made by the director of the Hammermill laboratories, who pointed out the introduction of new and more efficient equipment and improvements in some of the major processes had resulted in a considerable reduction in waste of expensive raw material, and in the development of a high quality of product, thus strengthening the position of the industry in competition with that of other countries which enjoy the advantage of less expensive labor and raw materials.

Doctor Johnsen paid a tribute to recent work done at the United States Forest Products Laboratory at Madison, Wis., on factors in the cooking process that influence the quality and the yield of pulps, referring to researches there by R. N. Miller, chemist in forest products, which have established more definitely the effects of varying the cooking conditions in the preparation of sulphite pulp.

In the course of visits to several board mills some interesting observations were made on problems common to the paper board industry, but these will have to be held over to a later issue.

A Collegiate Safety Course

A COLLEGIATE course in safety is being offered by a large university. This is the first time to our knowledge that a recognized university or college has ever offered a course in safety work. The pioneers in the venture are the New York University with the co-operation of the American Museum of Safety.

The course is to be a credit course, part of the curriculum of the school, and is to be conducted by capable instructors who are for the most part safety directors in large institutions. A well planned routine of study has been laid out after considerable time and thought on the part of the sponsors.

This announcement should afford great pleasure, for the need for capable, trained leaders in safety work has long been apparent. The safety director in a plant or mill is no longer a person who is to be looked at askance—a good enough fellow perhaps, but just a little bit "cracked" on the subject of safety. Superintendents, managers, foremen, even the mill hands and laborers have learned to respect and admire such a man. They have learned that such an office in the hands of a capable person means much to both themselves and to the firm. Under safe, sane working conditions, production is increased, accidents are reduced, the general morale is much higher and everyone in general is benefited.

Employers would find it not an expense, but a highly profitable investment to send one or more of their employees to the college to study safety. The eventual returns would more than justify the original outlay.

The New York University deserves the highest commendation for its venture into the great and wide field of safety instruction. The directors and members of the faculty have our sincerest wishes, as well as those of every right thinking person in the paper industry, for a successful future.

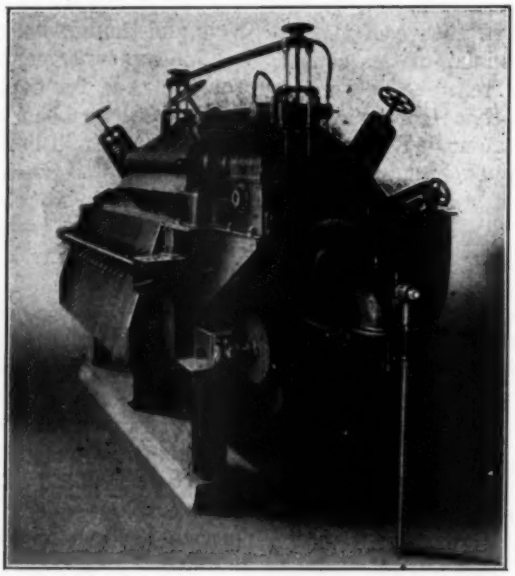
The Background for the Vertical Pronoun

WHILE he was vice-president of a great corporation he was visited by three college graduates. They were in search of a starting position. Having nothing to offer, he wrote each of them a letter of introduction to business friends, soliciting consideration in their behalf. Written on company letterheads, he signed the letters as "Vice-President." Each of the boys found work.

Three years later he retired. Came then an old school-mate. A worthy fellow, capable and well-respected, but fallen upon misfortune. The ex-vice-president wrote two score of his former business associates in behalf of the man he knew tried and proven. Courteous replies came but no action. He was without the backing of his corporation.

ANOTHER OLIVER
for Paper Mill Work

This Time for
HIGH DENSITY THICKENING



Feed to this Oliver ½ per cent air dry stock. Discharged sheet as high as 30 per cent air dry. Filtrate contains practically no fibre.

A western paper manufacturing company has recently ordered four of these Olivers for a new mill.

Oliver Results

on Washing Lime Mud, Thickening, Bleach Washing, and on White Water Waste Recovery are always

Satisfactory

See page 381 in the 1926 Paper and Pulp Mill Catalogue

Oliver Continuous Filter Co.

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802 Cunard Building

New York
1422 Aeolian Building

London
11 Southampton Row

Johannesburg, South Africa
E. L. Bateman, The Corner House

THE PAPER INDUSTRY

REG. U. S. PAT. OFF.

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Early Manufacture of Newsprint from Wood Pulp

A Reminiscence

By GEORGE W. KNOWLTON
President, Knowlton Brothers, Watertown, N. Y.

THE Voelter patent which became effective in this country in 1868 was a great innovation and revolutionized the manufacturing of paper, especially the cheaper grades, and for newspapers it proved to be the ideal process. It consisted simply of grinding wood on an ordinary grindstone, and so produced an ideal pulp to work into paper. For printing newspapers it had just the right qualities needed —sufficient strength, satisfactory color and an absorbent texture, which permitted printing both sides of the sheet at once without what the printers call the offset. A first, poplar was considered the most desirable because of its whiter color, but it was apparent almost at once that there was not sufficient quantity and spruce soon became the standard.

The men who first realized the importance of the process were the late Warner Miller. Albrecht Pagenstecher of New York, William A. Russell of Bellows Falls, Vt., and A. D. Remington of Watertown. Mr. Miller and Mr. Remington both had paper mills and at once undertook to establish grinders and Mr. Russell soon followed. The grinder at that time was a small crude affair with a screw feed, operated by a belt and a grinder of that period would produce about 500 pounds of pulp in 24 hours.

One of my experiences of those days was a visit to Herkimer on some business with Mr. Miller (a stranger to me then) relating to the mill, and when I reached there I found a notice over the entrance which stated in very plain language that there was no admittance to the mill and it would be useless to ask for it, and my call on Mr. Miller was decidedly a failure. I did not know then that he was installing some wood grinders and did not want anyone to know it, and while Mr. Miller and I in later years became very good friends, I have a vivid recollection of the chilly reception I received that day and the abruptness with which he ended our interview.

I am sorry that I cannot recall the price one had to pay for the use of every machine, but it seemed excessive and many were the attempts to get around the patents. Mr. Hastings of the Rochester Paper company, with a Mr. Ames, produced a machine and used it but with poor success. No grinder ever amounted to anything that attempted to get around the Voelter patent. In addition to the price one had to pay for the use of the grinder, if any wood pulp were sold, the price was five cents a pound. All efforts to avoid paying the price failed and those who faced and accepted the terms demanded were the ones who won out. In those early days there were no such facilities for getting out wood as exist now and sometimes it was difficult to get wood as required. Mr. Remington cut the Gordian knot by buying sawed spruce timber. That saved the trouble of taking the bark off the round sticks, but it was an expensive way of getting the wood. There was plenty of it and it was cheap, and there was a great profit in pulp when sold or used.

I remember being in Bellows Falls where Mr. Russell had installed a very complete wood preparing outfit. They bought slab wood and cut it up into suitable lengths, had facilities for barking and a lot of boring machines with different sized augers to bore out the knots.

Early Prejudice Against Wood Pulp Paper

The present generation will hardly realize the prejudice which existed against wood pulp paper. To be sure the paper made from wood pulp today is a much finer article than the earlier product, but aside

from the quality, there was a great prejudice and I am not sure that there were not some laws passed against its use in certain cases. After Mr. Remington's mill was making really good wood pulp and he felt that his product was quite satisfactory, he took an order from the New York Times for a number of carloads of paper with a definite understanding that there was to be no wood pulp used. It was a fair bargain and both sides understood it. But Mr. Remington was convinced that it was nothing but prejudice on the part of the Times and that if they would try a wood pulp paper they would see that it was greatly to their advantage, as it was much cheaper, so in the dozen carloads he made he made one carload and put some wood pulp in it. It was all marked in order that there could be no mistake and there was no attempt to deceive anybody. Mr. Remington made the shipment, notified the New York Times, told them about the one car with wood pulp in it and sent the bill. The New York Times received the bill, referred to the terms, no wood pulp, refused to receive any of it and the whole shipment was returned to Watertown.

Printing Newspapers on Flat Paper

What would the world do today without wood pulp? Roll news, so common to us, was not in the market prior to the introduction of wood pulp paper. The Hoe ten cylinder press was quite generally used for all the large daily papers, and that meant ten men to feed it. One side was printed at a time, the sheet having to be turned over to print the other side, and all that was a very slow process compared to the press of today that prints, folds and delivers 50,000 newspapers an hour. In the early days of mechanical wood pulp, it was necessary to have rag pulp to the extent of 20 or 30 per cent, according to quality, to give it the requisite strength and it was not until about 1886 or 1887 that the idea prevailed that the rag room could be done away with and chemical wood pulp used in making paper entirely of wood. It was soon evident that rags were no longer essential for making most grades of paper.

Production of Chemical Wood Pulp

The production of chemical wood pulp rapidly increased and there were many difficulties to be overcome and it changed the whole industry in a very few years. One of the incidents of the early attempts at producing chemical pulp was the establishing of the Richmond Paper Company at Providence. I think that it was in 1889 that George Marshall of Turners Falls, Emmons Crocker of Fitchburg, and Charles Wheelwright of Boston, heard of a process in Norway. They corresponded and investigated until they were convinced that a process had been found that was going to change the paper manufacturing industry entirely. Arrangements were made and these three gentlemen went to Norway and stayed several months, investigating every detail, and I have been told that to make sure no tricks were played on them, one or two would stay in the mill nights to watch every process and they were convinced the paper business would be revolutionized. I was in Fitchburg and looked over the samples of the product produced and after hearing the story of their work and experience, I felt that my little old mill, like many other little old mills, was about to be put out of business.

The Richmond Paper Company mill was built and it was certainly a fine plant. There was no one admitted to the mill except those that were employed. The original estimate called for the expenditure of half a million. I have been told that they spent a million. But the Richmond Paper Company did not make good. I never understood just what was wrong but it was a great surprise to all who knew about it and a great disappointment to those who had projected it and put in their own good money with such perfect confidence. The investment was all lost and eventually the mill was dismantled. I knew something of the men referred to, Messrs. Marshall, Crocker and Wheelwright, and I don't know where one could find three more capable men to investigate and put through such an enterprise than these three and where the mistakes were I have never known. I have been told that the disappointment and chagrin caused by the failure of the Richmond Paper Company was largely responsible for the death of Mr. Marshall. He was not an old man and had been looked upon as a very successful paper manufacturer.

The price of what we call newspaper before the days of wood pulp was approximately ten cents a pound. There was a rather better grade called "religious news." In those days no one dreamed of such quantities of newspaper being used as are now required. The New York Herald, I think, had the largest circulation and being in the office I asked about their consumption and was told that sometimes it would run as high as 20 tons in 24 hours. Now there are several papers that use 100 tons or more a day, and what seemed large to me 50 years ago seems like trifles to the present generation.

The Mellon Institute of Industrial Research has recently completed exhaustive tests of varying types of flooring. These tests, which have overthrown some time honored conceptions, should be of interest to both industrial and domestic builders. One of the curious results was the disclosure that ordinary maple wood possesses much the same degree of resistance to abrasion as does marble. From the results of this test we also find cork tile nearly three times as wearing as Portland cement, and rubber nearly five times as wearing as vitreous tile.

Lessons in Paper Making

Lesson IV—Presses

By HARRY WILLIAMSON
Class Instructor, Champion Fibre Co.

This article is the fourth of a series of lessons in practical paper making, appearing each month in The Paper Industry by arrangement with the Champion Fibre Company, Canton, N. C. These lessons are a part of the general educational course conducted by this company under the direction of Mr. J. Norman Spawn, educational director.

Mechanical Features

THE correct application of the mechanical features of the press have much to do with the life and efficiency of the felts used and also in the quality and quantity of the paper produced.

Granted a level sheet formed on the wire, the pressing is the next most vital factor in determining the even caliper and finish, and the even length of the roll of paper.

Cockling or uneven shrinkage of the sheet on the dryers is generally blamed on inadequate removal of the condensed water in the dryers or the slack or worn dryer felts.

These are contributing factors, but it will more often be found that the primary cause lies either in uneven formation on the wire or uneven application of pressure on the presses. The latter cause, if fairly constant when making light weight, can usually be traced to the crown on the rolls, the couching of the top roll, or the weight applied by leverage.

If cockling occurs only occasionally, it can be traced to the condition of the felts. Cockling is neither more nor less than uneven shrinkage of the paper, that is, one section of the paper in its width will shrink quicker than the other.

If the water content of the paper is evenly distributed when it leaves the wire and unevenly distributed when it enters the dryers, the trouble must be looked for in the pressing.

Again, "felt marks" are a prolific source of breaks and are usually briefly dismissed as being caused by a dirty felt. If we analyze the matter thoroughly, however, we are forced to the conclusion that **"a felt mark, no matter what the cause"** is a failure on the part of the felt to pass through it the water squeezed from the paper, and there are many causes. The felt may be perfectly clean, yet owing to the seam being crooked the mesh of the felt will be closed at the point where it is tightest and consequently the water cannot pass through it.

The application of crown and leverage weight have much to do with keeping the weave of the felt, as indicated by the seam, straight and therefore open.

Again, owing to the small amount of couch, as setting the top press roll back of center is called, the water may back up in the nip and fail to follow the circumference of the bottom roll into the save-all. Such action would cause a volume of water to constantly roll in the nip of the press rolls resisting the passage of the water from the felt.

The other extreme, too much couch of the top press roll, is equally troublesome. In this case, the pressure is applied to the paper at too great a distance from the actual nip, as a consequence the felt is loaded with water as it enters between the rolls and the volume is too great to be got rid of in the distance represented by the actual juncture of the press rolls, paper and felt.

This is particularly noticeable when there is a break at the wire, as the suction on the felt cannot be sealed until the whole sheet is across the width of the press.

As the usual procedure is to carry a narrow strip as far as the third press, such strip has to do without the aid of the suction to remove the water from itself and the felt and it will repeatedly crush.

Similar crushing of the strip when taking a break over will be experienced if the top roll has been further couched and yet retains the same amount of crown.

The more a top press roll has been couched, the less the amount of crown required, because by couching, the arc of contact between the circular ends of the press rolls has been moved further apart.

The happy medium of sufficient couch, correct crown and adequate leverage weight applied is to be aimed at and arrived at only by studying the duties and importance of each relative to the others and the local conditions existing.

Levers and Weights

The levers on a press, whether single or compound, are primarily designed to give "a variable, flexible application of weight to the paper, as distinct from the dead weight of the press roll."

Why variable?

To meet the various necessities of the paper maker as they occur such as:

a—When making heavy papers, more weight can be applied.

b—There is always more dryer surface than the paper occupies. The edge of the paper will therefore be dried harder on the dryer due

to the heat transmitted laterally from this uncovered surface.

c—To help regulate the amount of finish and bulk required in the finished sheet.

d—Should the stock become too free, the edges of the sheet would be thinned owing to the early settling of the fibre on the wire, and the vigor of the shake. Easing the weight on the levers of the first press, enables the machine tender to make paper instead of "hay" until adjustments can be made in the jordaning.

e—The press rolls are crowned, that is, made convex, to offset the deflection due to their weight and width and lack of support in the center. The levers and weights bring the rolls together in a straight line nip, with due allowance for the extra moisture desired at the edges to offset the extra heat at the ends of the dryers.

Why flexible?

A binding dead weight applied to the wet tender sheet would displace the fibres and spoil the formation. The levers are therefore designed to give or "ride" with the revolutions of the press rolls.

The two primary duties of the presses and press felts are:

a—To remove water.

b—To compact the sheet, that is, lay and press the fibre into a more homogeneous sheet than it was when it left the wire.

The problem of pressing is to do these two things evenly across the width of the sheet, without adding the impress of the felts or the rolls to the paper.

To Calculate the Weight Applied.

As shown in Figure 14, by leverage we are enabled to multiply the force or weight applied, by transmitting such force through the length of a lever acting over a fixed fulcrum pivot.

The greater the distance from the fulcrum pivot to the force or weight applied in relation to the distance between the fulcrum pivot and the point to which said force is transmitted, the power will be the multiple or such force or weight.

Figure 14

The arrows show the direction in which the force travels. In Figure 14, the fulcrum pivot is between the points where the force is applied and where the force is transmitted; therefore, the transmission of force is in an upward direction.

When the point of force transmitted is between the fulcrum pivot and the force applied, as in the case with press levers shown in Figure 15, the transmission of such force or weight is in a downward direction and becomes pressure instead of a lift.

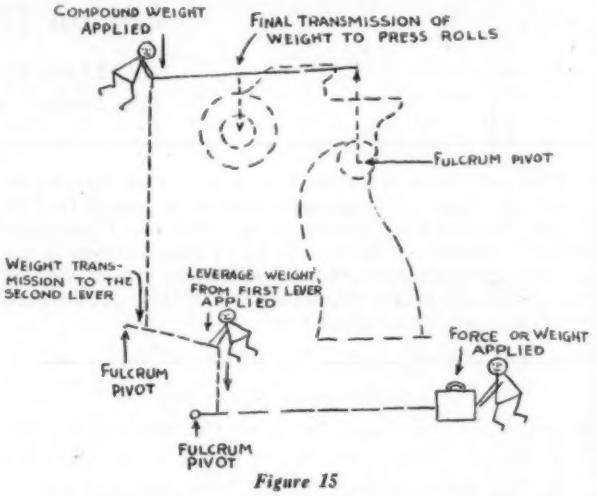

COMPOUND WEIGHT APPLIED
FINAL TRANSMISSION OF WEIGHT TO PRESS ROLLS
FULCRUM PIVOT
WEIGHT TRANSMISSION TO THE SECOND LEVER
LEVERAGE WEIGHT FROM FIRST LEVER APPLIED
FORCE OR WEIGHT APPLIED
FULCRUM PIVOT
FULCRUM PIVOT

Figure 15

Leverage weight is computed by the following equation:

$$\text{Force or weight applied} = \frac{\text{Total length of levers} \times \text{weight}}{\text{Fulcrums}}$$

In Figure 15, the total length of the first lever from the center of the weight is 48 inches. The length from the fulcrum pivot to the point where the force is transmitted is 3 inches, and the weight itself is 50 lbs.; therefore, the leverage weight from the first lever transmitted to the second lever would be:

$$\frac{48 \times 50}{3} = 800 \text{ lbs.}$$

Figure 16 shows the complete calculation of the

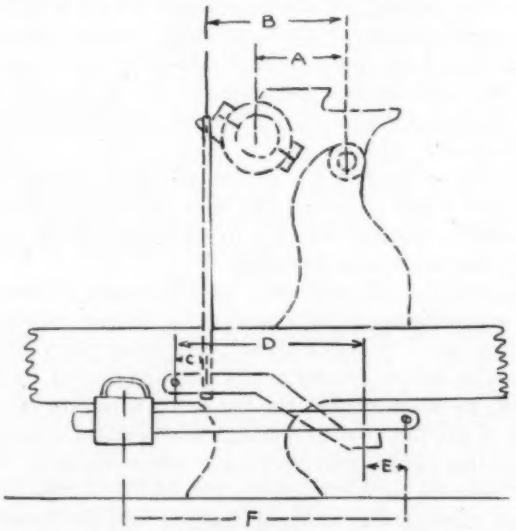


Figure 16

weight in pounds applied by leverage to the journal of the press roll.

Load in pounds on journal = weight in lbs. × F ×

D × B divided by E × C × A; all of these distances should be expressed in inches.

The diameter and speed of the press rolls, the amount of couch and crown given to them; the density of the rubber, the grade of paper to be made and the type of the felts to be used are all factors to be taken into consideration when estimating the amount of pressure desired. This is usually done when ordering the machine.

It is, however, the practical every day application of the leverage weight with which we are chiefly concerned, rather than the occasional necessity to calulate the weight applied.

When the levers are set to form a perfect right angle as in Figure 17, without binding at any of the points of transmission, the weight applied will be equal to that calculated and flexible. A good test is to apply a slight pressure by hand to the end of the lever. If set correctly the lever will respond to the lightest pressure, resuming its original position as soon as the pressure is removed.

Should the lever be set low as indicated by dotted line (a) the weight applied will be less than that calculated; therefore, the crown which has been ground on the press rolls will not be overcome, resulting in a greater moisture content in the edge of the paper.

The weave of the felt as indicated by the seam would drop back at the edges because the edges of the felt would have a less distance to travel during each revolution than the center. This condition can be offset by applying leaders round the ends of a felt roll, thus increasing the diameter of the roll sufficiently to force the edges of the felt forward again.

It must be remembered, however, that although the weave of the felt can be kept open by this means, the edges of the felt are not subject to the same pressure as the center. Consequently, the felt edges will gradually become loaded with water to such an extent that the passage of water pressed from the paper at the nip is resisted by the volume of water in the felt, thus causing a displacement of the fibres resulting in a felt mark.

If the lever is set high, as indicated by the dotted line (b), the pressure will be dead and binding rather than flexible. This condition is particularly hard on the felts, tending to destroy the resiliency of the woolen yard. It is much better to put more weights on the lever and retain the flexible action than to set the lever high.

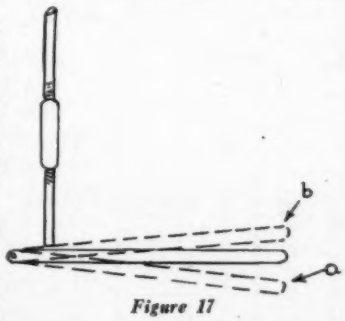


Figure 17

To facilitate handling during a wash up, the verticle rod through which the leverage weight is transmitted to the press roll has a connecting eye bolt passing through the frame to the lever. **Careless adjustment of this eye bolt is a prolific source of trouble.**

Figure 18 shows the eye bolt set correctly; that is, it is clear of the frame at both the top and bottom and does not bind in its connection with the lever.

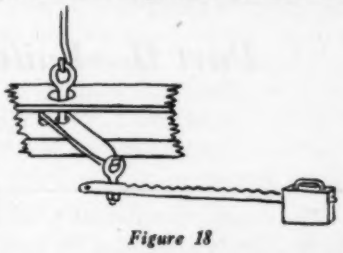


Figure 18

Figures 19 and 20 show the eye bolt set incorrectly in the two possible ways. In Figure 19, the ring of the eye bolt is jammed against the top of the frame, while in Figure 20 the end of the bolt rests against the bottom of the frame.

In either case, the whole of the leverage weight would be applied at the point where the bolt rests against the frame, and fail to be transmitted through the vertical rod to the press roll.

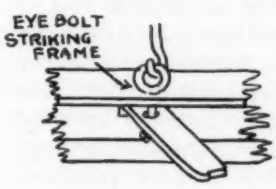


Figure 19

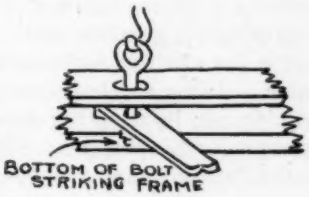


Figure 20

The effect of such an adjustment would cause the press roll, ground convex, to tip to the side where the pressure was correctly applied. This condition is much worse on the felts and rubber covering than any other error in lever adjustment.

The side on which the error occurs has no pressure applied at all; as a consequence, the felt and the rubber quickly become dry. If running at a high rate of speed, the doctor blade and top press roll will generate heat. This will be passed onto the felt and also to the rubber cover, so that the felt is not only dry, but baked.

A felt run under such condition only needs a small crack in the edge to burst off the machine.

To get service, the rubber and the underneath side of the felt should always be moist when running. This can only be obtained by correctly applying the leverage weight.

Instead of remembering the term leverage weight, we could use another name—which will help us to bear in mind the purposes of leverage in paper making. We could call it **flexible pressure.**

According to statistics compiled by the National Safety Council, employees who have worked in an industrial establishment less than one year, are most likely to be injured. Employers should be sure to instruct new workers regarding the hazards attendant on their particular jobs.

Cost Accounting for Paper Mills

Part II—Building the System and Recording Materials and Supplies

By CHARLES WILLIAM GOULD, JR.

The second installment of this series of six articles by Mr. Gould scheduled for publication in THE PAPER INDUSTRY *is presented herewith. The next chapter will treat on the Development of Standard Burden.*

The Plant Ledger

THE first requisite of a paper manufacturing business, other than a suitable place for the performance of work, is an ample and continuous supply of pure water. Therefore, the first charges to be considered from an accounting standpoint are those relating to the acquisition cost of waterrights, grounds and buildings. Next in order come the charges for building fixtures, such permanent fixtures as elevators, plumbing, fire-protection equipment, lighting fixtures, time detector systems; and finally, the charges for machinery and equipment, office furniture and fixtures, trucks and automobiles.

These accounts are called plant accounts, since they represent the cost of plant and equipment, and are recorded in separate ledger accounts, rather than grouped under one account, as quite frequently found. The advantage of this special account method is found when charges for taxes, insurance and depreciation are to be made on the basis of the face values of plant and equipment indicated by these accounts.

Accountants and engineers often experience considerable difficulty when trying to analyze the books of the average manufacturing concern for auditing or appraisal purposes. Usually there is a large discrepancy between the plant assets as shown by an inventory count and the assets as they are recorded on the books. In a large number of cases, this is because a miscellaneous assortment of charges appears on the books, when as a matter of fact no such total of assets can be discovered by a close investigation.

Much of the difficulty surrounding this matter will be dissipated if the management will provide a plant ledger, wherein each article or unit of equipment is recorded separately, showing the original cost and the amount of depreciation provided annually. In many progressive concerns the use of such a ledger is almost an absolute necessity if anything resembling accuracy is desired in the plant and cost accounts. A well defined system of classification of plant accounts, therefore, is seen to constitute a large part in the success of any cost accounting system.

There should be no mill today without a detailed equipment inventory with a number for each machine, its purpose, location and price. No doubt the starting of a plant ledger entails a great deal of labor, but when once started its maintenance is simple and requires but little additional work. It will be necessary that each new machine, or piece of equipment acquired during the year, together with any improvements made which actually increase the functional capacity of the asset, be recorded at once, and at the close of the year the depreciation calculated.

The plant accounts, designed for this particular system, and outlined in the chart of accounts are designated as follows:

C-1 Water Rights.
C- 2 Land.
C-3 Buildings.
C-4 Building Fixtures.
C-5 Machinery and Equipment.
C-6 Furniture and Fixtures.
C-7 Trucks and Automobiles.

A Plant Ledger card should be maintained for each item of equipment (Figure 1) and and the ledger so arranged to show plant values by classes of assets, divided by departments or operating

PLANT LEDGER

LOCATION_____ CLASS. NO._____

MACHINE MFG. NO. OUR NO.

MADE BY BOUGHT OF

DEPARTMENT PURPOSE

INV.DATE	INV. NO.	TERMS	TOT. AMT.	DISC	FGT.	NET COST

DESCRIPTION

DATE	ITEMS	DEBITS	CREDITS	BALANCE

Figure 1

centers and subdivided by classes of equipment.

The accompanying condensed classification will serve to show the various classes of equipment used in a paper manufacturing plant:

Code	CLASSIFICATION OF EQUIPMENT
C 4-57- 1	Elevators.
C 4-57- 2	Plumbing.
C 4-58- 3	Fire Protection Equipment.
C 4-58- 4	Lighting Fixtures.
C 4-57- 5	Time Detector Systems.
C 5-55- 6	Dams, Wells and Reservoirs.
C 5-55- 7	Underground Piping.
C 5-50- 8	Railroad Tracks and Trestles.
C 5-58- 9	Fences, Sidewalks and Roadways.
C 5- 7-10	Miscellaneous Paper Mill Machinery.
C 5-40-11	Pumps and Engines.
C 5-52-12	Machine Tools.
C 5-40-13	Steam Plant and Steam Transmission Equipment.
C 5-41-14	Motors and Electrical Equipment.
C 5- 5-15	Brick Drainers.
C 5- 7-16	Tubs, Tanks and Vats.
C 5- 4-17	Shafting and Pulleys.
C 5-41-18	Electric Wiring.
C 5- 4-19	Manufacturing Pipe.
C 5-17-20	Trucks and Scales.
C 5-17-21	Benches, Tables and Racks.
C 5-16-22	Miscellaneous Equipment.
C 6-63-23	Furniture and Fixtures (Office).
C 7-57-24	Automobiles.
C 7-54-25	Trucks.

To each department or center is assigned a specific number (Burden Ledger Accounts) by which it is always known. Under this method the charge for a pump purchased for the Water Supply department would be classified C 5-55-11, in which C 5 would be the account number, 55 the department for which the pump was purchased, and 11 the class of equipment.

All accounts represented in this ledger should be in balance with their respective controlling accounts in the General Ledger.

The reverse side of the Plant Ledger card (Figure 2) is designed to provide space for recording depreciation, both for the current year and years accumulated to date. The flexibility of the Plant Ledger not only permits departmental transfers, but establishes a practical basis for crediting the plant accounts when machinery or other equipment is sold or otherwise disposed of.

DEPRECIATION

CLASSIFICATION _____

YEAR	FACE VALUE	RATE	DEPRECIATION THIS PERIOD	AMOUNT WRITTEN OFF TO DATE	DED. RESERVE SOLD-JUNKED	TOTAL RESERVE	% TOT. F.V.	REMARKS

Figure 2

Standard Practice Instructions

One of the most frequent sources of annoyance in cost work is the failure of employees to carry out instructions. "I don't believe you told me to do it in that way," "I forgot," or "I don't understand." A really effective way to invite a long string of these and other irritating excuses from employees who have failed to perform their work properly, is to give them nothing but a verbal outline, in general terms, of what is desired and expected of them.

The fault lies not so much with the employees as it does with the management. The best way of informing those responsible for carrying out the system is to put all instructions in writing so that they can be read and studied. No other method is effective.

When a method or a form becomes standard practice, written instructions should be issued to the various departments which are to operate the form or method. Sufficient copies should be made to accommodate all departments in which the method is in force. When a method or form is changed, new instructions should be issued covering the change and the superseded instructions canceled.

In no circumstances should foremen, forewomen, or clerks deviate from these instructions. If an occasion arises which will not permit following the standard practice, the accounting official should be notified at once, and temporary instructions issued which should be canceled or made permanent within a reasonable length of time.

Purchase Orders

Purchase orders should be issued for all purchases. In other words, the Purchasing department is to have a suitable record of all orders placed, no matter how large or small. Verbal or telephone orders should always be confirmed by the issue of an order.

When a department head requires material or supplies which are not ordinarily carried in stock, he will make out a purchase requisition in triplicate, and will show thereon, the quantity required, when required, a comprehensive description of the material, what they are to be used for and the account number to be charged when the goods are received. The triplicate copy will be retained by the individual making out the requisition. The original and duplicate copies are then forwarded to the store's clerk who will see that the requisition is properly made out and also that the material requisitioned is not in stock or already on order. The two copies of the requisition are then forwarded to the Purchasing department.

The purchase order will be written from the information appearing on the purchase requisition, and is to be made out in triplicate, a short carbon being used for the duplicate copy in order to omit the price. The original copy will be sent to the vendor, the duplicate to the receiving clerk, to serve as a receiving slip and the triplicate retained for record and follow-up.

The purchase order number, and the firm from which the material is ordered, is then entered on the duplicate copy of the purchase requisition and returned to the individual requiring the material. This serves as a notice to him that the material has been ordered and may be used to follow-up delivery of the goods. Generally, most of these requisitions will be issued by the store's clerk to maintain balances on regular materials and supplies.

Upon arrival all goods are to be opened in the storeroom and checked, exceptions being made only in the case of rags, pulp, glue, sizing and bulk chemicals, which will be checked in original containers. The receiving clerk will enter on the receiving slip (duplicate copy of the purchase order) the date received and the condition in which received and will immediately forward the receiving slip to the general accounting department where it will be used in passing the purchase invoice for payment.

* * *

RECORDING MATERIALS AND SUPPLIES

Accounts Payable Register

In order to clarify the operation of a cost system, it is desirable to describe each form, its relation to the other forms and to the system as a whole. The forms presented in connection with this system are simple in construction, yet at the same time practical. If the function of all the forms is understood, it is relatively easy to construct them so as to collect information under any set of conditions. In describing these forms, it will be, perhaps, clearer if we discuss by groups those relating to material, labor, burden and production.

Although the accounts payable register records purchases of every description, and not simply material and supplies, it may be conveniently discussed here. In designing the accounting system for that part of a manufacturing concern relating to expenditures, careful consideration always must be given to existing conditions. The financial status of the company, the desire to carry individual accounts with creditors, in whole or in part; or the method of carrying detailed classification of operating accounts, are some of the factors to be considered.

A purchase register may be used for the purpose of recording expenditures by increasing the number of distributive columns. This method carried out to its logical conclusion would require the entering in the purchase register of every expenditure incurred, which cannot always be done. As a general rule, the smaller recurring monthly items, as telephone, telegrams, electric light, together with a larger or smaller number of sundry items, are not entered on the books until paid, when they are entered on the cash book and distributed direct to the expense accounts. This is to avoid the necessity of opening a large number of creditors' accounts to which reference would seldom be made, an objectionable system seeing that the expenses are not charged to the month to which they belong.

The need for a more uniform method of recording expenditures for cost accounting purposes and to eliminate as much detail posting as possible, and to have all data relative to indebtedness incurred or disbursements made in such form as to allow of formal approval and authorization of payment led to the adoption of the accounts payable register.

All purchase invoices as received will be compared with the purchase order, and approved, as to price, terms, calculations, and receipt of goods. When the invoice has been fully approved, it will be entered on the accounts payable register, showing the date of invoice, vendor's name, the net amount to be paid the vendor in the column headed accounts payable, and the amount of freight (if freight is to be paid in addition to the payment to the vendor) in the column headed, freight suspense. The total of entries in these two credit columns will be extended into one or more of the debit distribution columns, in accordance with the distribution of the invoice.

The lines on the accounts payable register sheets, should be numbered and the page numbers shown at the top of each page. An invoice entered on line 10 of page 5, would be given the number 5-10. Therefore, the line on which an invoice is entered indicates the invoice number, and conversely, the invoice number furnishes the page and line number in the ac-

counts payable register. The debit distribution columns used in this accounts payable register are rags, chemicals, general supplies, burden control and a sundry general ledger column.

The debit to an inventory or expense account for each invoice should be made at the net cost to the company delivered. For example: a purchase of $500 f. o. b. destination, less 2 per cent cash discount, which comes freight collect $25, would be entered as follows: From the face of the invoice deduct the 2 per cent cash discount, or $10, leaving a net of $490. From this amount deduct the freight paid of $25 which leaves a net amount due to vendor of $465. The $465 is entered in the column headed accounts payable, the $25 entered in the freight suspense column and the net cost, or $490, entered in one of the debit distribution columns, for example, rags.

When invoices are paid, a dating stamp may be used to record the date of payment opposite each item, in the column headed "date paid" in the accounts payable register. The total of the unstamped items at the close of each period, should agree with the balance of the accounts payable account in the general ledger and there should be an unpaid invoice on file for each unstamped item.

In addition to the entry of invoices from vendors, the accounts payable register may be used to record vouchers representing transfers between the various inventory accounts. Charges to the burden accounts are shown in the column headed burden control and distributed in detail on the supplies and miscellaneous expense distribution sheets.

At the close of each period, the columns are footed and proof made that the totals of the footings of the credit columns equal the totals of the debit columns. These total footings, except in the case of the column headed general ledger, are posted to the individual accounts affected. The items entered in the column headed general ledger will be posted to the general ledger accounts affected.

RECEIVING SLIP - RAW MATERIAL

MATERIAL DATE REC'D.

LOT NO. INV. DATE CAR NO.

UNITS TOTAL WEIGHT SHIPPER NO.

UNIT NO.		WEIGHT		UNIT NO.		WEIGHT	
OUR	THEIR	OUR	THEIR	OUR	THEIR	OUR	THEIR
1				26			
2				27			
3				28			
4				29			
5				30			
6				31			
7				32			
8				33			
9				34			
10				35			
11				36			
12				37			
13				38			
14				39			
15				40			
16				41			
17				42			
18				43			
19				44			
20				45			
21				46			
22				47			
23				48			
24				49			
25				50			
TOTAL							

Figure 3

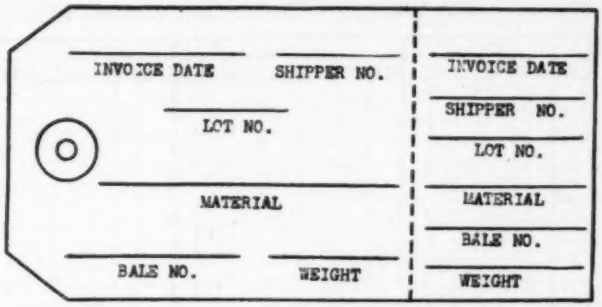


Figure 4

Receiving Slip

A receiving slip (Figure 3) is used for recording the receipt of all packaged material, such as rags, pulp, glue, hides for sizing, chemicals, etc., which come in separate containers.

This form is headed up from the purchase invoice, and should bear a description of the material, invoice date, car number, and a serial lot number assigned to the shipment. In addition, the unit numbers given by the vendor (in case of rags, the unit would be a bale, or in the case of a chemical, a drum etc.) recorded in the columns provided and the corresponding invoice weights listed.

Bale Tags

The primary use of bale tags (Figure 4) is to identify bales of rags, these tags may also be used to identify materials other than rags which are shipped in containers and received and recorded separately. These tags are made out from the purchase invoice. One tag being made out for each bale or container listed on the invoice and should bear a description of the material and a shipper number together with a consecutive bale or container number on the main portion of the tag, and also on the stub. The serial lot number assigned to each shipment is also recorded on each tag.

The receiving slip, together with the bale tags, covering a lot or shipment, is forwarded to the receiving clerk, who records at the top of the slip, the date received. As each unit is taken from the car, it is weighed, and the receiving weight compared with the vendor's invoice weights, as previously recorded

on the receiving slip, and if the bales can not be identified, an invoice weight selected which most nearly approximates to the receiving weight. The unit number corresponding to the invoice weight selected is noted, and the proper bale tag attached to the bale or container. The bale or container is then placed in storage or used.

When a lot has been completely unloaded, the receiving slip is forwarded to the cost department and used as a means of recording this information on the back of the raw material inventory card.

The receiving slip is then used to check up the invoice weight of each bale or container with the receiving weight, thus noting any discrepancies which may occur in these weights, which will require adjustment with the vendor. After such adjustments have been disposed of, it may be filed by lot number for future reference.

Raw Material Inventory Card

The raw material inventory card (Figure 5) is designed with ten position tabs. The tabs bear the lot number, and so provide a ready reference. When a purchase invoice for raw material is received and approved for payment, a raw material inventory card will be headed up, giving a description of the material, vendor's name and number, purchase order number, lot number, price and terms. In addition, pounds billed, total amount, discount, freight and cartage, together with the net cost recorded in the spaces provided.

When the receiving slip, covering each lot or shipment, is returned from the receiving clerk, the date received, car number, lot number, total units received and a record of the receiving weight opposite each unit number, will be copied on the back of the card (Figure 6). These weights will be footed and the total recorded in the space provided. The date received, total units received, and total weight received are carried to the face of this form and recorded in the spaces marked respectively "date received," "units received," and "pounds received." The net cost, divided by the pounds received, gives a cost per pound of material received in each lot.

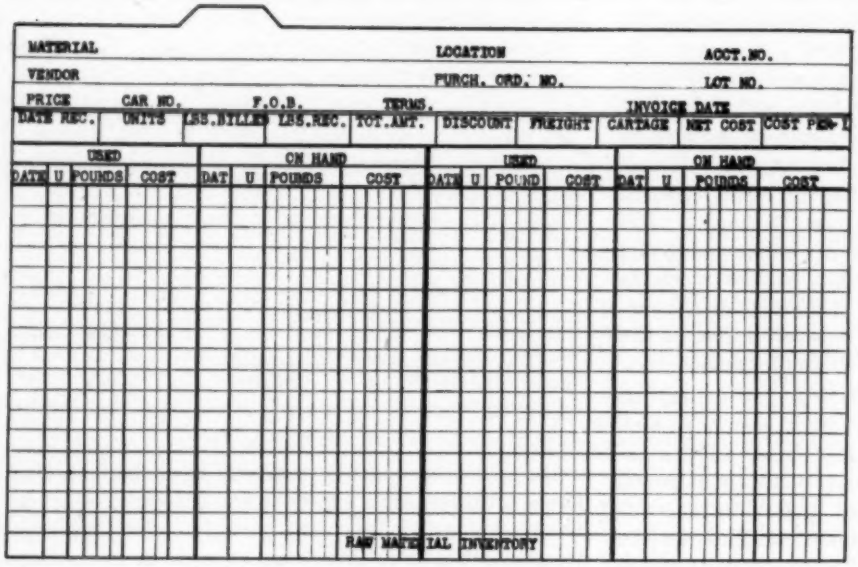


Figure 5

As bales or containers are removed from the warehouse, the trucker removes the stub from each bale tag and also collects all stubs for the day, turning these in at the close of the day to the cost department.

As bales or containers are opened for use, the bale tags are removed and collected, the date opened being recorded on the back of each tag, together with the scale weight of sacking and wire (baled rags only). At the close of the day these tags are forwarded to the cost department, and are matched up with the corresponding stubs. The total of bales and pounds used in each lot is posted from the main portion of

UNIT NO		WEIGHT		DATE USED	UNIT NO		WEIGHT		DATE USED
OUR	THEIR	OUR	THEIR		OUR	THEIR	OUR	THEIR	
1					29				
2					30				
3					31				
4					32				
5					33				
6					34				
7					35				
8					36				
9					37				
10					38				
11					39				
12					40				
13					41				
14					42				
15					43				
16					44				
17					45				
18					46				
19					47				
20					48				
21					49				
22					50				
23					51				
24					52				
25					53				
26					54				
27					55				
28					56				

Figure 6

the bale tag to the face of the raw material card. The total weight used is priced at the cost per pound calculated for the lot, and entered in the section of the card headed "used" only. At the same time, the date used is recorded on the back of the form opposite the bale or container numbers as shown, thus indicating at any time, the exact identifying numbers of all bales or containers unused in each lot. At the close of the period each lot card is balanced, and the units, pounds and value on hand shown.

The cost department is then in a position to check from time to time the bales or containers remaining on the floor where used with the unmatched stubs in their possession. There should be an unmatched stub for each unopened bale or container from the warehouse.

The lot number, bale number, pounds, value and tare (baled rags only) of baled rags, glue, sizing and rosin paste used each day will be recorded on the proper material used register sheets.

The charges to raw material accounts will be made at the close of each period and should consist of the footings of the distribution columns headed rags, chemicals, and an analysis of the general ledger column in the accounts payable register. Journal vouchers should be prepared in the cost department at the close of each period crediting all raw material accounts with raw materials put in process during the period. Credits to these accounts will be posted from such journal vouchers.

Account numbers B-1 rags; B-2 pulps; B-4 glue; B-5 hides; B-6 chemicals, are controlling accounts over detailed card ledgers kept with each lot of materials in stock in the cost department on raw material inventory cards. A total of the balances on the individual cards for each account, should therefore equal the corresponding balances in the controlling accounts at the close of each period.

Store Ledger

A store's ledger card (Figure 7) will be headed up for each item, giving a full description of the article, its location in the store room, the unit used, i. e., whether pounds, pieces, etc., the proper supply classification number and also the maximum and minimum quantities to carry in stock.

The face of the card is divided into four sections, headed respectively, ordered, received, used and balance. The date, purchase order number and quantity, to be recorded under ordered, will be ascertained from the purchase requisition returned from the purchasing department after the goods have been ordered. As goods are received, the date received, invoice number, units, quantity, price and cost will be entered from the purchase invoice in the proper columns under "received" and a line drawn through the corresponding quantity entered under "ordered."

When material is drawn from stores, a stores requisition may be made out by a department head or it may be issued by the stores clerk. In either case, one ticket should be made out for each item required. Should it not be convenient for a department head to make out the requisition, the stores clerk will issue such material as is required, making out a ticket for each separate item, giving in each case a description of the material issued and the account number to which the material is chargeable. The quantity issued will be recorded on all tickets together with the initials of the issuing clerk. The stores clerk will see that all tickets covering issues of material from stores are signed by the person receiving such material. In case the person receiving the material is not able to write, the clerk should write in the name and have the individual make an identifying mark opposite.

STORES LEDGER

ARTICLE CLASS. MAX.
LOCATION UNIT GROSS TARE NET MIN.

ORDERED			RECEIVED						USED					BALANCE				
DATE	P.O.	QUAN.	DATE	I.S.	U	QUAN.	PRIC	COST	DAT	U	QUAN	PRIC	COST	DATE	U	QUAN	A.P.	COST

Figure 7

At the close of each day all stores requisition tickets will be sorted by article. The quantity issued multiplied by the average price obtained from the stores ledger will give the value which will be recorded in the column headed amount on the stores requisition. The articles issued to each department or center will be listed daily on a supplies and miscellaneous expense distribution sheet, which will be used as a basis for a stores distribution. The supplies and miscellaneous expense distribution

should be of considerable value to the superintendent in maintaining control over the quantity of material issued periodically from stores to each center.

The total quantity as well as total value of each kind of article issued will be entered in the "used" section of the stores ledger card. The total quantity and value received will be recorded at the close of each day as an addition to the balance on hand at the close of the previous day, in the section of the card headed "balance" and the total quantity and value used will be entered in the same section as a deduction, leaving a new balance on hand at the end of the day. By dividing the value of the balance by the quantity remaining, an average cost per unit will be obtained which will be used to price stores requisitions for the succeeding day.

A trial balance should be taken of the value of balances shown on the stores ledger cards at the end of each period and the total value of balances should agree with the balance as shown by the controlling account B-7 general supplies in the general ledger.

It will be necessary from time to time to check the balances on the stores ledger with the actual quantities of each article in stock. This should be done systematically by checking a few articles each day and thus going through the whole stock. Should there be any variations between the balances as indicated on the cards, and that obtained by a physical count, an adjustment should be made on the cards to correct the discrepancies. A memorandum of the value involved in each adjustment will be made and at the close of the period a journal voucher prepared covering the net inventory adjustment to account B-7 general supplies, the offsetting entry being to account J-1 inventory adjustments.

Why Manufacturers Should Protect Their Trademarks

By MILTON G. CARVER

OF GREAT interest to manufacturers and legitimate retail merchants is the pending Capper-Kelly Bill, which proposes to legalize re-sale contracts of trademarked goods. National advertisers have constantly suffered in their business through fake bargain sales which are advertised by glaring window signs to attract the unwary. The measure is opposed by those concerns which advertise cut-rate sales to attract the attention of customers who, it is charged, generally find that the rate which is cut usually means that any concession to the buyer of a popular line is covered by excessive charges when less well advertised wares are purchased.

The United States Chamber of Commerce is vitally interested in the question as to whether legislation should be enacted permitting the re-sale price maintenance on identified merchandise, and contends generally, that retailers going out of business and disposing of stocks of goods on hand at cut rates would in cases of goods bearing trademarks, be obliged to notify the wholesale manufacturer of their intention to dispose of his trademarked products at cut rates and give him an opportunity to repurchase the stock in order to prevent the decrease of sale price for his trademarked products generally.

The Committee in Interstate and Foreign Commerce recently found it necessary to recommend to Congress the passing of a "misbranding" bill to make compulsory the branding of all articles moving in interstate commerce in order to prohibit misrepresentation in any brand or label. It affords protection to the purchasing public by providing for judicial condemnation of misbranded articles.

It is generally recognized in trades that among the most valuable assets are the legal rights granted them under the trademark laws.

The Supreme Court of the United States has declared that an unregistered trademark is valid only in that portion of the United States where it has been actually used in business; that you cannot prevent another from using your unregistered trademark in that portion of the United States where you have not previously used it; and that a user of your unregistered trademark in another portion of the United States can prevent you from using it there, although you may have adopted it years before he did.

In view of recent court decisions affecting trademarks, there will probably be a demand for authoritative trademark information generally, treated from the angle of Federal requirements. A definite policy for manufacturers who desire to keep on the right side of a trademark controversy which may develop and affect his business is therefore necessary. Questions often arise as to ownership, partnerships, wholesalers not manufacturing the product they trademark, and so on.

From the above you will see that you may be unable to extend your business under your unregistered trademarks, and for this reason you should have these most valuable assets of your business protected by proper registration as trademarks.

A certificate of registration is prima facie evidence of ownership of a mark and is the most practical plan of identifying to the purchaser the precise quality of the goods offered. Your competitor by securing prior registration of the trademark under which you are marketing your products may cause you to abandon an extensive advertising campaign by instituting an action for damages and to restraint by injunction.

Many manufacturers may jeopardize some of their rights by manufacturing articles of great value under

trade names that are not protected by trademark registration, but are depending solely on their common law rights. Such manufacturers should immediately seek the protection that the trademark laws afford, thus avoiding unnecessary loss and litigation.

What would be the going concern value of your business if suddenly compelled to abandon your trademarks and adopt new ones? What would it cost to educate the public to a complete list of new trademarks and labels? Clearly there exists the necessity to investigate use of a trademark before commercial adoption.

The business man cannot afford to guess in a matter so vitally important to the existence of his establishment. It is too closely allied with his profits and he must know positively that he is properly protected from invasion by competitors.

The value of a trademark is that anyone by counterfeiting or making a colorable imitation of the mark can derive no advantage or rights therefrom.

Factors Determining the Location of Pulp and Paper Mills

Part II—Raw Material and Transportation Facilities

By HARRY E. WESTON

Associated with Thomas H. Savery, Jr., Chicago; Formerly Assistant Professor of Pulp and Paper Manufacture, the New York State College of Forestry, Syracuse, N. Y.

WITHOUT good water it would be inadvisable to locate a pulp or paper mill in any region. Likewise, without a supply of raw material the project would become one of doubtful character.

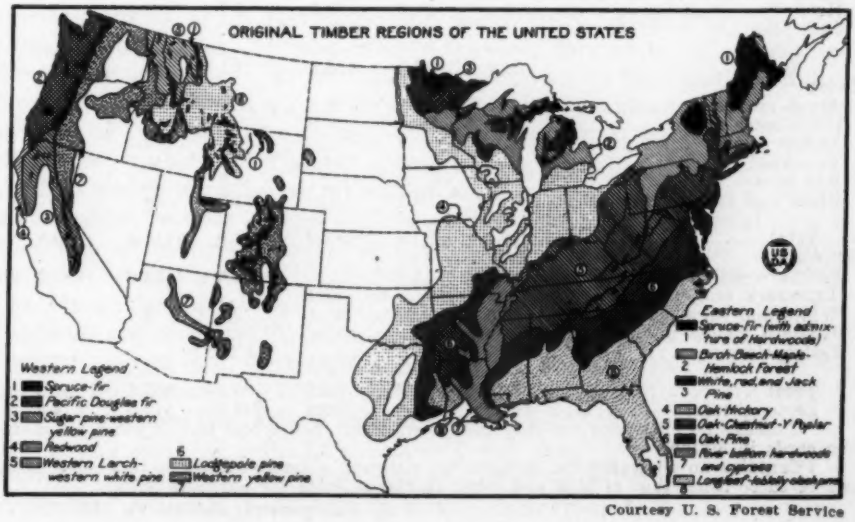
Pulpwood was listed for the first time in the census reports of 1869. The listing covered a little more than 2,000 cords which together with other raw material produced approximately 386,000 tons of paper. Since that time wood has risen steadily and rapidly in importance and today is the most important fibrous material of the industry.

In 1920, the consumption of pulpwood in the United States was over 6,000,000 cords. Of this total 52.4 per cent was reduced by the sulphite process, 26 per cent by the mechanical process, 15.1 per cent by the soda process, and 6.5 per cent by the sulphate process. The quantity of non-forest fibrous materials used in the manufacture of paper is insignificant when compared to the quantity of wood utilized in the same industry. The relative importance of the major raw materials for 1919 has been illustrated graphically in Chart I.

The species of wood that may be used for pulp and paper manufacture are being investigated thoroughly. Woods which a few years ago were thought of no use to the industry are now being used daily. There are still a great many woods that will be found suitable after the proper investigations and tests have been made with them.

Softwoods or conifers of low resin content find their greatest use in the production of sulphite and groundwood pulps. Most of the deciduous species or hardwoods are reduced by the soda process, while the sulphate process has been largely confined to the conifers of both low and high resin content. At present the four leading woods used for pulp manufacture are spruce, hemlock, balsam and poplar. Other species, such as yellow pine, tamarack, gum, white fir, jack pine, cottonwood, basswood, white pine, beech, birch and maple are also employed to a greater or lesser extent.

In estimating the capacity of any proposed installation, it is well to be familiar with the approximate quantity of raw material required per ton of pulp. About one cord of wood is required per ton of me-



Courtesy U. S. Forest Service

chanical pulp, while two cords might be a fair estimate per ton of sulphite, soda or sulphate pulp.

The principal species of wood in the total stand of timber of the United States are listed in Chart II.

It is good business to locate the plant as close to the supply of raw material as possible. A number of American mills have to transport their timber for miles. Oftentimes this entails the expenditure of

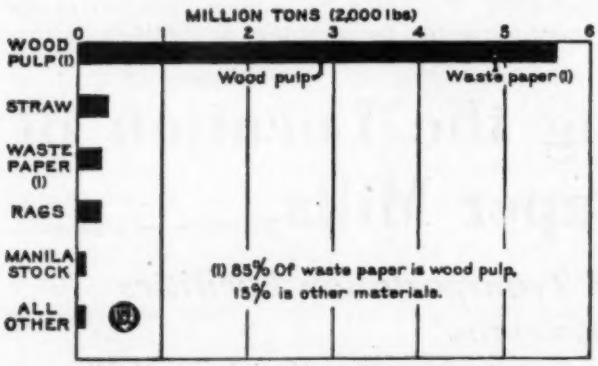


Chart 1—U. S. D. A. Dept. Bulletin No. 1241

considerable money. Most of this charge has been caused by the lack of foresight of mill owners with lack of information and interest in the proper methods of handling their forest holdings. Lands in the vicinity of some plants have been stripped of timber with no thought given to a continued supply which would be necessary for any mill to run indefinitely. Their motto seemed to be "Let the Future Take Care of Itself." Now it is necessary for them to transport their timber for miles by railroads or waterways. In some cases where wood is shipped by water, it has to be unloaded at docks and delivered to a railroad for further shipment to the mill. In many instances, much of this expense could have been avoided by putting into practice proper methods of reforesting cut-over lands and also by developing more scientific methods of harvesting merchantable timber.

To maintain this basic industry, new fields of raw material must be drawn upon or old fields redeveloped. If new fields are preferred, it will mean the migration of the industry away from existing markets and the facing of technical problems in the utilization of unfamiliar species.

Transportation Facilities

The early mills in this country usually developed at points which were at that time advantageously situated. The development of railroads, together with the utilization of wood as a raw material, permitted plants to be located near the source of supply of raw material as well as comparatively close to market. These mills, having in many instances impoverished their supply of raw material, are compelled in order to remain in operation to transport their raw material over considerable distances. Such plants are more advantageously located in relation to markets than are plants which are being located today, but they have the disadvantage of increased transportation distance in the handling of raw material.

Since transportation facilities constitute such an important element in the locating of a new plant, it is imperative that one sufficiently trained in the problems of transportation make a thorough canvass of all transporting facilities before the final decision is made.

The common agencies of present day transporta-

CHART II

Total stand of timber of principal kinds suitable for pulp, by regions

[Millions of cords.]

Kind of timber and principal present or prospective use for pulp	New England	Middle Atlantic	Lake	Central	South Atlantic	Lower Mississippi	Rocky Mountain	Pacific coast	Total United States	Southeast Alaska
Sulphite, mechanical, and sulphate:										
Spruce and fir	*85.5	14.0	17.1	3.4	3.4	....	85.5	205.1	414.0	45.3
Hemlock	6.4	23.9	51.3	19.7	6.4	....	2.5	200.9	311.1	121.4
Jack pine	....	....	38.4	....	....	....	....	....	38.4	....
Total	91.9	37.9	106.8	23.1	9.8	....	88.0	406.0	763.5	166.7
Soda:										
Aspen and cottonwood	6.4	2.2	27.3	10.7	5.1	21.4	12.8	....	85.9	.2
Birch-beech-maple	29.0	80.3	136.8	102.6	16.2	16.3	....	....	381.2	.1
Yellow poplar	....	.7	....	29.9	15.4	1.0	....	....	47.0	....
Basswood	2.6	2.2	17.1	10.7	1.7	....	....	....	34.3	....
Red gum	....	.9	....	18.8	51.3	97.4	....	....	168.4	....
Black and tupelo gums	....	1.1	....	21.3	54.7	54.7	....	....	131.8	....
Total	38.0	87.4	181.2	194.0	144.4	190.8	12.8	....	848.6	.3
Sulphate:†										
Southern yellow pine	1.1	15.1	....	21.4	453.0	487.2	....	....	977.8	....
Tamarack and larch	.9	....	21.4	....	....	....	34.2	12.8	69.3	....
White and sugar pines	35.0	22.2	21.4	2.5	4.3	....	42.7	81.2	209.3	....
Western yellow pine	....	....	....	....	....	....	136.8	384.6	521.4	....
Lodgepole pine	....	....	....	....	....	....	128.2	12.8	141.0	....
Total	37.0	37.3	42.8	23.9	457.3	487.2	341.9	491.4	1,918.8	....
Regional total	166.9	162.6	330.8	241.0	611.5	678.0	442.7	897.4	3,530.9	167.0

* Contains no allowance for reduction in stand by spruce bud worm, which amounts to 40 per cent, or about 27½ million cords in Maine.

† Contains no allowance for Douglas fir, although a small volume is now being used. The stand is very large, probably two or three times that of pine and other species suitable for sulphate pulp.

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tion are rail, water, motor truck, tractor and horse or mule-drawn vehicle. One or more of these agencies may be used for the transportation of commodities of all kinds. The aeroplane as yet is confined largely to the handling of mail, although in some instances it has been used for the transportation of other products. All rail transportation covers the movement of freight entirely by rail, while all water transportation covers the movement of freight wholly by handling raw materials, supplies and finished products. Commodities to be handled, rates, competition (alternative routes in case of congestion or disagreement), rehandling, distance and time are all factors which should be stressed in the study. In brief, rates and service would have to be carefully considered.

A few of the most important incoming commodities would be such materials as wood, coal, chemicals,

Courtesy—C. E. Libby
Road built by large paper mill organization for transportation of supplies to lumber camps. Road is approximately 50 miles long and for the most part is through wooded area

Courtesy—New York State College of Forestry
Typical stand of mixed hardwoods and conifers in the Adirondack area

Courtesy—C. E. Libby
Ripogenus Dam, said to be third largest dam in the United States, constructed by Great Northern Paper Co. to facilitate transportation of logs to mill

water. In the latter case, it is necessary that a shipment originate at the port from which a vessel sails and be confined for delivery at the port of destination. Express shipments are made only in case of necessity. It might be imperative, for example, that an order of material, either incoming or outgoing, be shipped by the fastest available route. In such a case, express shipment usually offers the greatest speed and is, therefore, used. Motor trucks, tractors and horse of mule-drawn vehicles also have their place. Motor trucks, or tractors, with trailers are used often where the distance of haul is not too great. Likewise, horse or mule-drawn vehicles are of considerable importance. The product of a small mill, for example, may be hauled for one-half mile or more to a railroad where it is loaded into freight cars for further shipment.

To handle traffic matters efficiently, it is essential that a study be made of the most practical means of machinery, etc., while the finished product or products of the plant would be in the outgoing shipments.

A number of the New York State mills are forced to purchase their wood in Canada and to have it shipped over considerable distances. The wood may be shipped by rail, by water, or by rail and water. The cost of transporting wood has become an item of extreme importance since the selling price of the finished product must be based upon the total cost of production plus profit. Likewise, the fuel question is becoming one of increased importance. Oftentimes coal from a particular region must be used. In like manner, sulphur and most of the remaining raw materials are frequently shipped from particular localities. Most of the sulphite mills of the United States and Canada receive their sulphur from either the Louisiana or Texas beds. Likewise, in a smaller way, the limestone required in the tower systems of acid making comes largely from the Gouverneur lime-

stone beds for most of the sulphite mills of New York State. The nature of such commodities has a large bearing on the selection of the carrier. Where time is not essential, shipment should be made over the cheapest route. If possible, mills should be located on both rail and waterways.

Competition often aids in obtaining lower rates.

Courtesy—New York State College of Forestry
A cut-over and burned-over area in the Adirondacks

A survey of all competitive points over which commodities might be shipped should be made. A competitive point is one that may be reached by two or more common carriers. The rates over two competing lines are usually the same, although one route might be much more direct than the other. In some cases the destination of commodities is at a noncompetitive point; that is, the plant is located at a point where no selection in carrier can be made.

Without doubt, transportation costs always tend to limit markets since they determine the area within which a plant may compete with profit. Rates (4)

Courtesy—New York State College of Forestry
Scattering growth of young conifers on area after logging and fire. Reproduction not sufficient to bring about general recovery of ground with conifers

on paper will naturally depend on grade and market. For example, the rate on newsprint from practically every New York State producing mill to New York City is 25c per 100 pounds or $5 per ton net. From many points in Eastern Canada, the rate to New York City is 34c per 100 pounds, or $6.80 per ton net. From certain other points in Canada, the rates range from one to five cents per 100 pounds higher. Such rates are termed "blanket" rates.

From points in New England, rates are anything but uniform, since they are made on a distance basis. The rate for 100 pounds, for example, from Woodland, Me., to New York is 29c; from Livermore Falls, Me., 26c; from Millinocket, Me., 29c; from Berlin, N. H., 25c, and from Norwalk, Conn., 16½c. Rates to Chicago from the so-called Fox River group (Wisconsin) are 15½c per 100 pounds, and are higher

River scene with logs on way to mill

from Sault Ste. Marie, Ontario and International Falls, Minn.

The measure of rates and method of adjustment for printing, wrapping and other grades is different from that of newsprint. Likewise, wood pulp rates are on an entirely different basis than paper rates.

Direct shipments are usually desired. They usually do away with rehandling at transfer points, thus minimizing rehandling costs, which are often extremely high. Most of the commodities which are used in the industry can be shipped direct either as outgoing or incoming freight. However, this is not always possible and some of our plants, because of their location relative to timber holdings are forced to transfer their wood supply often from one type of carrier to that of another during transit to the mills. In some instances, transfer depots have been established with storage facilities for large quantities of wood.

The distance between the point of shipment and the destination must be carefully considered in the selection of a common carrier. The cost of shipment must be such that the product or products can be sold for the same price or for less than it is possible to sell similar goods, made in the proximity of the market center. Many Canadian mills, for example, are located miles away from market, but are very close to the supply of raw material. It is generally consid-

(4) Data obtained from Mr. A. H. Campbell through courtesy of Dr. H. P. Baker, Secretary, American Paper and Pulp Association.

ered better policy, wherever possible, to ship a small bulk of material as finished product to market by means of a common carrier over a considerable distance than to ship a larger bulk of raw material over the same distance to a plant located near the market.

The efficient purchase of chemicals and equipment is dependent often upon the amount of time lost in transportation. A breakdown or shortage of materials necessary for proper operation of a plant would cause much inconvenience if proper transportation facilities were not to be had.

(Continued in next issue.)

Tax Advantages of a Partnership

Examples of Where a Change to Partnership Is Desirable

By M. P. SNOW
Public Accountant and Tax Consultant

WOULD you pay a higher tax as a corporation than you would pay if you were organized as a partnership? A large number of concerns with whom I have come in contact in the last few years have been paying a considerably higher tax because of the double tax which applies to corporations and their stockholders.

If your concern is a corporation, there is no need for me to explain the fact that with your corporation paying a tax on a certain amount of income and the stockholders paying a second tax on a portion or all of that income, you are subject to a form of **double** tax which does not apply to members of a partnership.

I do not mean to say that in all cases a corporation and its stockholders will pay a greater tax than the members of a partnership but in the majority of concerns, which of course means the smaller concerns, I am confident that a lower tax would be paid as a partnership than as a corporation.

For the year 1926, this year, the tax rates on corporations is 13½ per cent. This is a flat rate. The highest rate on individuals is 20 per cent. This is of course the surtax which ranges from 1 to 20 per cent. Then there are normal taxes of 1½, 3 and 5 per cent. Generally speaking, if a partner's net income runs very much above $50,000 it is doubtful whether he will pay any less tax than he would if he were a stockholder in a corporation.

One of the things which goes to equalize to some extent the situation caused by double taxation of corporations is the fact that the income of a partnership is taxable to the partners whether it is distributed or not. In other words, if you are a partner in a concern which shows a net profit at the end of the year, of let us say, $100,000, you must pay a tax on your share of that $100,000 which, let us say, would be $50,000, regardless of the fact that only $20,000 of that may be paid to you in salary and distributions. On the other hand, a corporation's stockholder pays a tax only on the actual amount distributed to him. Even stock dividends are not taxable. This was decided by a Supreme Court ruling made several years ago.

So, the fact that a partner's share of his concern's net earnings is taxable whether or not it is distributed, operates to increase the desirability of a corporate form of organization after the income reaches a certain stage.

In the example I have just mentioned, the partner receives only $20,000 out of an amount of $50,000 which is rightfully coming to him out of the partnership, but which is held for surplus in the future operations of the business. The stockholder of a corporation whose share of the profits, figured on the percentage of stock he holds, would be the same as the partner just mentioned, would pay a tax only on the actual amount of money he received. In other words, the stockholder receiving the same thing as a partner, would pay a tax on $20,000 where the partner would pay a tax on $50,000.

An Example of Partnership Advantage

There is a material difference, of course, in the exemptions of various individuals. This causes a slight variation in the amount of taxes which individuals with the same net incomes would pay. But let us look at a corporation with a net income of $100,000 and two principal stockholders (of course there is a third but let us say in this case that his holdings are only nominal). The corporation has an income of $100,000. The stockholders receive a salary of $10,000 each. The corporation distributes 20 per cent of its net income in dividends to the stockholders. This dividend amounts to $20,000 which is divided between the two stockholders. In order to make this example easy, let us say that a $10,000 dividend is received by each of these two stockholders. Assuming that each of the stockholders has an exemption of $4,300, each receiving a $10,000 salary and $10,000 dividend, would pay a tax of $303.25. The two of them pay a total tax of $606.50. The corporation has already paid a tax of 13½ per cent or $13,500 on this $100,000 income.

Let us change the situation now and see what

these two individuals would pay if they were partners. There is an amount of $50,000 which is taxable to both of these individuals. The tax on $50,000 would be about $5,000 to each of these partners. That would be a total tax of about $10,000 to the two of them. Now, the corporation, alone, which paid a tax of $13,500, pays about $3,500 more than these two partners, to say nothing of the additional amount which the stockholders will pay. In other words, there is a difference of about $4,100 between what the partners will pay and what the stockholders and corporation will pay.

Advantages Lessen as Income Increases

Go a little bit higher up the ladder of income, to a total net profit of $200,000. You will notice a smaller difference between the partnership and the corporate tax, here. The total amount paid by the stockholders and the corporation in this case, assuming the same exemptions, salaries, and a dividend of $40,000 to the two stockholders, would be $28,926.50. The total paid by the partners would be $32,057. You will see that the advantage of being a partnership or a corporation will depend not only on the tax rates in effect, as applying to each form of organization, but also to a large degree on the number of partners or stockholders, the amount of distribution in the case of the corporation, the number of dependents, the amount of other income, etc. Let me say this, however. The average corporation does not distribute the major portion of its earnings in dividends. The ordinary concern which is run on a good basis is generally conservative as to its surplus. It wishes to have something laid up against a dull period. The Government tax on undistributed earnings of corporations has not had the effect which apparently was anticipated by Congress. It was expected, or rather hoped, that this tax of 50 per cent on undistributed earnings would cause corporations to put out their earnings in dividends and thus subject these earnings to a double tax and cause a larger stream of revenue into Uncle Sam's coffers.

However, it has been a rather difficult thing for the Treasury Department, which administers the income tax, to say when a corporation is holding earnings in excess of its needs. In fact, I know of only one case where this tax on undistributed earnings has been assessed. A corporation might make a net profit of a $1,000,000 in a year and distribute only $100,000 of that in dividends, without necessarily incurring this penalty for holdng money in a corporation.

Congress has tried through various methods to attack the amount of money kept in the corporate coffers which, if distributed, would yield a large revenue to the Government, but so far these attempts have been rather unsuccessful.

The tax bureau tried to tax the stock dividend, but, as stated before, the stock dividend was ruled by the United States Supreme Court to be non-taxable. Congress then tried to fasten on these huge undistributed sums held by the corporation by means of undistributed earnings tax, which has not been enforced in very many cases within my experience. Therefore, the stockholders of a corporation feel that they may hold as much of the earnings of a corporation surplus as they desire without much likelihood that the Government will get after them about it. Because of this situation a corporation having a net income of several hundred thousand dollars and distributing very little of that income, even if the corporation is closely held, will be in a better position from a tax standpoint than would a partnership having the same number of principals. There is a sort of breaking off point where it is profitable to be a corporation, for tax purposes, and where it ceases to be profitable from a tax standpoint to continue as a partnership. However, as I have said, this point varies according to the number of stockholders or partners, the amount of other income, exemptions, credits, etc. I would advise that any concern figure carefully on the tax advantages of other forms of organization if the concern is paying a substantial amount of tax.

A small corporation in many instances will find it far cheaper to operate as a partnership than as a corporation.

Of course there are other cases where it would be much more profitable from a tax standpoint to operate as a corporation than as a partnership but these cases are rather scarce where the incomes do not run into pretty high figures.

Most business men nowadays agree that from a business standpoint, the corporate form of organization is the most desirable. However, I have seen a number of cases recently where **close corporations** have found it desirable to change their forms of organization. There is no objection to doing this, on the part of the Government, because it is a man's own business as to what form of organization he wishes his concern to have.

Really, the only way to ascertain whether your concern is paying a higher tax under its present organization that it would in some other form is to take the actual earnings of the corporation and make out returns all the way through on both bases. This will tell definitely whether it would save money for you in taxes to change.

Just a short while ago I recommended a switch from one form to another in the case of several concerns who, because of the peculiar situations, were paying a much higher tax than they would under different organization.

A Pointer on Making Current Returns

Now here is a point quite independent of the rest of this story. For those of you who are filing your returns on September 15 for the fiscal year ended June 30, 1926, let me suggest that you bear in mind particularly the fact that a net loss in the year 1925

is deductible against the income of the year 1926. In other words, if you suffered a net loss in the year ending in 1926, and you made money in the year ended June 30, 1926, you may deduct your loss of the fiscal year 1925 against the income of this fiscal year 1926. As a matter of fact, if your income for the fiscal year ended June 30, this year, does not absorb the loss of the year just preceding, you may carry forward any excess and deduct it against the income of 1927.

Economies in Truck Fleet Operation

Purchasing Should Receive Special Attention for Best Results

By S. K. HARGIS

PAPER mills operating truck fleets, like most other heavy industries, find truck operation costs rising in ratio with the increased number of truck units in use.

Among the ways in which these costs can be held down is through a special system of purchasing for this department, and several thousands of dollars a year may be earned or lost as the case may be.

Paper mill and paper house trucks are subject to heavy wear and tear. Their rate of depreciation is often rapid where maintenance is not fully up to standard. Losses of this kind are seldom detected at a time when effective remedies may be applied.

Buying for the paper fleet—the buying of parts, accessories, oil and gas—is the one, most important point of attack where costs are out of proportion to service. In a fleet of five or more trucks, the company will find it advisable to place buying in a special class by itself—distinct and separate from the regular purchasing department at least up to a certain point.

The purpose of these notes is to describe briefly a few short cuts in purchasing and maintenance that have had the severest tests in other organizations in the East and West.

Most of the suggestions apply to the fleet of five or fifty trucks as the case may be. In any case, the underlying principle is the same.

Maintenance and operation are two different phases of paper truck management, but they are closely allied in practice.

Savings on Gas and Oil

Actual economy has been found in the buying of gas by the tank car, where storage facilities on the property or at the garage are available. Better savings are possible than in the purchase from tank trucks, one concern reporting a saving of over $500 on gas purchased by tank car in a period of 90 days. It has been found that investment in storage tanks at strategical points pay for themselves within a year or two. A track is necessary but most of the large mills have such facilities.

One large buyer of gas has a chemist's analysis made of each lot purchased to insure the receipt of the quality paid for, resulting in a considerable saving over the period of a year.

Large fleet operators are buying oil that conforms with the specifications set by the United States Bureau of Standards as a protection to their engines. They are buying oil in large quantities as in the case of gas.

Tire Economies

One plant maintains a careful record of tire performance and gauge their tire purchases accordingly. When a new tire is adjusted to the truck, an entry is made on a special sheet. Cost of repairs on this particular tire is entered as the repairs are made and the depreciation is written off according to this "history." By trying out various brands and sizes, comparisons are possible which lead to worthwhile economies.

It has been found that tire values vary with local street and haulage conditions. Only tests will give the facts.

Garage Manager Buys

Some of the largest plants place all truck fleet buying initiative in the hands of the garage manager. He specifies what he wants and designates where purchases shall be made. These requisitions are passed through the plant purchasing department in the routine way. The garage manager has an emergency account at a given supply house by which he is not pinned down to the red tape of the purchasing department in case of immediate need.

In the case of a large fleet of 22 trucks, the garage man is responsible for maintenance only and has nothing to do with operation. He, too, initiates all parts and supply buying for the fleet.

Watching the Market

Many plants operating large truck fleets require that their garage managers watch the market carefully and buy accordingly. When tires are down the firm is willing to invest in a large stock. In this way, one plant counted a saving of $3,500 in a single year.

New and standard parts are placed on the market and advantage should be taken of this.

There is now a considerable variation in discounts on truck parts and accessories. The garage manager should get on the mailing lists of all houses and study their price lists and discount sheets, also their special sales. This is one reason why purchases from the

best market make advisable the handling of fleet parts and supply buying as a separate proposition. Few ordinary purchasing departments have time or facilities to watch all the opportunities that arise in the automotive market nor have they usually the experience and knowledge to recognize such opportunities.

Claims for Replacements

Large fleets of trucks in the trade often are crippled by the purchase of defective parts. One large plant not only inspects each part as it is placed in stock but also notes its performance and is quick to return all defective stuff and make a formal claim for adjustment.

One large plant recently discovered a corner of its garage full of discarded but unused truck parts which the garage man had put aside with the intention of making a claim "some day."

But in the press of other business he never got to it and the loss was serious. Here is a leak that is well worth watching. The only way to protect the firm from parts that prove to be inferior or defective is to demand an immediate replacement.

Waiting defeats the end in view.

This is a requirement in the best regulated plants.

Stock Major Parts

Many of the large truck fleets in the trade have the advantage of stocks of major parts such as motor parts, pistons, transmissions and axles. This means that when a part is needed, the replacement can be made immediately and the vehicle is kept out of service only for a limited period—usually only over night. Such an inventory isn't prohibitive and it pays.

When to Overhaul

I find that most plants with well organized fleets systematically overhaul all units after 40,000 miles. This is done no matter in what condition the truck may be. Complete inspections are made every 2,200 miles. Drivers are required to report their mileage to the garage manager.

In this particular plant, the work of inspection is done rapidly by putting a special mechanic on each part of the job. Each makes a separate report and all are combined into a general report and filed in their order. Repairs or adjustments are made only upon the direction of the shop boss after all inspection sheets are turned in to him. It has been found that inspection is best done as a job by itself.

The truck is then turned over to the shop with written, detailed instructions as to what is to be done and how.

A well organized inspection system, carefully adhered to, usually permits shop work to be done efficiently and quickly and often overnight.

During a busy period the value of this is obvious.

Defects Explained to Drivers

In the case of the same fleet, all defects which can be traced to inexpert driving are called to the attention of the driver by the garage boss and he is first instructed and then cautioned to use more care in future. If similar defects recur again and again as a result of the same driver's carelessness, he is soundly reprimanded. A continuous offense of the same character brings a penalty.

Repair Percentages

An eastern plant makes the following report on its repair bills by percentages:

Truck engines, 41 per cent; body repairs, 11 per cent; transmission repairs, 21 per cent; clutch repairs, 10 per cent; miscellaneous repairs, 17 per cent.

Time Saved

In one large plant, operating 14 trucks, much time is saved by carefully planning the procedure on each type of repair job. A minimum of tool handling and parts collecting will eliminate much of the cost from a job of this kind. It was found that the time bill on most repairs was overwhelmingly the biggest item and the watchful eye of an experienced garage boss told him that savings were possible here, which they proved to be.

When Trucks Are "Written Off"

Most of the heavy trucks in the industry are written off the books in a seven-year period. Of course, there is bound to be some variation, owing to the make of the truck, its treatment and the use to which it is put. But depreciation is usually recorded on that basis, though there is an allowance for trading in or salvage return of from 7 to 10 per cent of original cost. Some of the heavier trucks used for heavy plant work are written off in 5 years. In plants where maintenance isn't up to a high standard, the life of a truck may be only 4 years.

Chemical Changes in Sulphite Pulp Cooking

AN ACCOUNT of the chemical changes involved in the sulphite process of cooking wood is abstracted in British Chemical Abstracts from a paper by O. Routala and J. Sevón in *Ann. Acad. Sci. Fennicae*, 1926, 26. Analyses of the pulp were made at various stages of mill cook, and of laboratory cooks controlled so that the temperature at each stage was the same as in a mill cook. The dissolution of incrusting substances begins during the first hour of the cook, and reaches an approximately constant velocity when a temperature of 80 to 100° C. is attained. It is therefore desirable to heat to 100° C. as rapidly as possible.

Toward the end of the cook the rate of dissolution diminishes. The sulphurous acid and calcium contents of the wood increase independently of the temperature, within certain limits, and the end-point is always reached after the same time.

Carbohydrates and lignin pass into solution together until 23.3 per cent of the wood has been dissolved; lignin then dissolves alone. The carbohydrates dissolved during the first few hours are mostly pentoses, hexoses dissolving later; the ratio of pentoses to hexoses in the hemicellulose is 1:2. It is probable that lignin and carbohydrates are combined in wood as glucoside-like compounds, and that the principal reactions in the sulphite process are the hydrolysis of such compounds and the formation of soluble calcium ligninsulphonates. The compound of lignin with cellulose contains the constituents in the ratio of 1:2.5, corresponding with 1 mol. of lignin (equivalent weight 360) to 5 glucose residues; the compounds of lignin with hemicelluloses contain 1 mol. of pentose and 2 mols. of hexose for each mol. of lignin. During cooking the resin and fat are partially removed but this is mainly due to mechanical action.

How to Splice Wire Rope

IN ORDER to prevent appreciable loss of strength at the splice of wire rope, it is customary to make the splice not less in length than that given in the table below for ropes of different sizes:

Diameter of Rope	Length of Splice
½-inch	15 feet
⅝-inch	20 feet
¾-inch	24 feet
⅞-inch	28 feet
1 -inch	32 feet
1⅛-inch	36 feet
1¼-inch	40 feet
1½-inch	45 feet

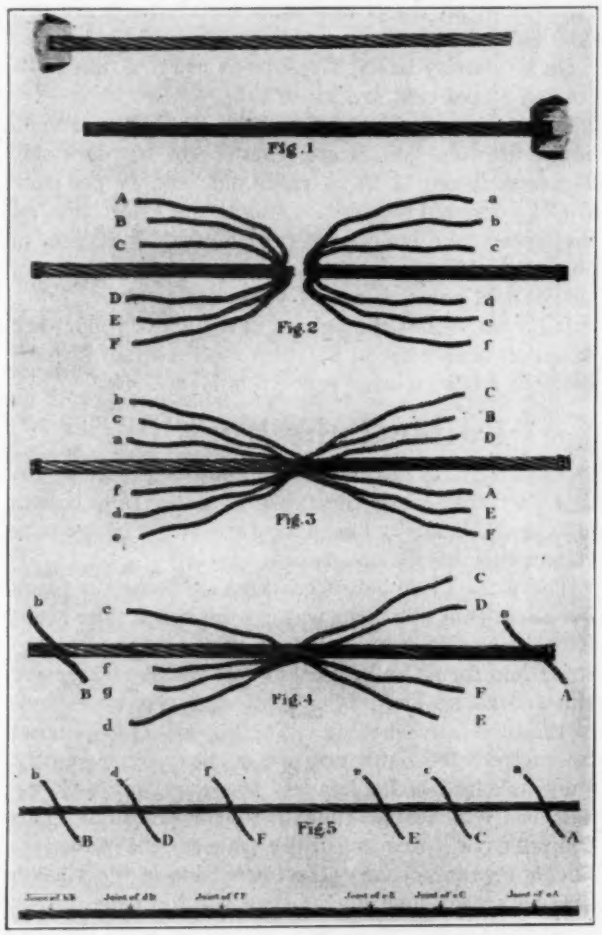
In splicing the two ropes, fasten the ends so that they overlap, allowing for a splice of from 15 to 45 feet, as indicated by the above scale. For purposes of explanation we will assume a 30-foot splice. First wrap or tie the ropes securely with iron wire 30 feet from each end, then unlay all strands 15 feet as shown in Figure 2 of the accompanying illustration, cutting away the hemp core to permit bringing the two unstranded ends together so that the strands will interlock as in Figure 3.

Take strand (a) and unlay it until the wire binding is reached, then in the open groove place strand (A). Lay (A) in tightly as shown in Figure 4, making twist agree exactly with twist of the open groove. Proceed in this way until all except 2 feet of (A) are laid in, then cut off (a) and (A), leaving the ends about 2 feet long. Now unlay strand (B) in the opposite direction and in its place put strand (b), stopping the ends of the rope in the corresponding position to (A), Figure 4.

Subsequently (c) will be replaced by (C), but this should be stopped 6 feet short of the junction of (A) and (a), as shown in Figure 5. Similarly, (D) should be replaced by (d) and the end stopped 6 feet short of Bb.

Proceed similarly with Ee and Ff, stopping the ends 6 feet short of Cc and Dd respectively.

The rope will now present the appearance shown in Figure 5 and the only remaining step is to tuck in the ends in such a way that the diameter of the rope will not be enlarged where the ends are tucked in.



This is done by removing the hemp center and putting the ends of the strands in the place previously occupied by the core. To do this, it is first necessary to open or untwist strands (Aa) so that the hemp center can be seized with a pair of pliers and pulled out. Then a marline spike is inserted to keep the gap open. After starting the loose ends into the space left vacant by the removed core, rotate the marline spike so as to force the strand into place.

Upon completion, hammer the rope slightly with a wooden or copper mallet, in order to assure a uniform diameter throughout the length of the splice.

Success in accident prevention work, says the National Safety Council, depends on adequate equipment, continuous inspection, safety education and employee co-operation.

Pointers for the Engineer

By W. F. SCHAPHORST, M.E.

Boilers in the Paper Industry

ACCORDING to an interesting report relating to the paper industry which I have before me, 32 per cent of all the power plant installations are fire tube boilers and 64 per cent are water tube boilers.

On a capacity basis, 17 per cent are fire tube boilers and 83 per cent are water tube.

The report, furthermore, shows that 29 per cent of the fire tube boilers are from one to 10 years old; 54 per cent are 11 to 20 years old; and 17 per cent are 21 years old or older. And at the same time, of the water tube boilers, 54 per cent are from one to 10 years old; 32 per cent are from 11 to 20 years old; and 14 per cent are 21 years old or older.

It is stated that the figures in the above report are based on nearly seven hundred replies to an investigation made by a large concern in New York.

Boiler Tube Buckling

ENGINEERS have observed and made note of the fact that when the tubes in water tube boilers buckle, they usually buckle upward, while in fire tube boilers they buckle downward.

There are a number of good reasons why the tubes buckle in this way. In water tube boilers the scale, if there is any, usually lodges on the bottom of the tubes and forms an insulation between the water and the source of heat. Consequently, the lower side of the tube is overheated. The tubes that are higher up in the tube bank are not so hot; consequently, they hold the boiler headers together, and as a result the overheated tube is in compression. This compressive force naturally causes the tubes to buckle upward because the lower side is the weaker side being so much hotter than the top side.

At the same time, it must be remembered that the lower side of the tubes in a water tube boiler are hotter than the upper side because the heat comes from below and the lower surface of the bottom tube is in "full view" of the hot fire in the furnace.

On the other hand, in fire tube boilers the scale forms on the outside and on top of the tubes. Heat is most intense on top because heat always goes upward. Therefore, for reasons similar to that explained above the tubes in fire tube boilers buckle downward.

Other things that no doubt have considerable influence in many boilers are soot and ash. In water tube boilers, soot and ash have a tendency to settle on the tops of the tubes, thus giving us an insulating effect there. That is, the heat is kept away from the tops of the tubes. This increases the tendency to buckle upward, the soot being on the outside of the tube while the scale is inside, the soot keeping the heat away from the tube and the scale keeping the heat away from the water.

In fire tube boilers, the soot is inside the tubes, at the bottom, and the scale adheres outside the tubes at the top. Hence, the higher temperature attained by the tops of the tubes in fire tube boilers.

This, it seems to me, covers the reasons pretty completely as to why boiler tubes buckle as they do. Not much room is left for argument.

Composition of Common Babbitts

THE following are the metals that are most used in making babbits; lead, tin, antimony, copper and bismuth.

The principal trouble with lead is that it melts at a trifle over 600° Fahr. and it is very soft. However, it has a lower coefficient of friction than any other metal, being in that respect similar to graphite.

To make the bearing metal tougher, stronger, and more dense, add tin. Tin, however, lowers the melting point and increases the friction. Tin melts at a temperature close to 450° Fahrenheit.

Unlike tin, antimony raises the melting point. It makes the bearing metal still harder. Unlike tin, it also reduces friction. By reducing friction the tendency to heat is also reduced. Antimony melts at a little less than 1200° Fahr. It tends to make the metal brittle. All in all, antimony is a "pretty good metal" for bearings.

Copper increases the melting point and makes the metal tougher and harder, but at the same time, surprising as it may seem, it increases the friction. Its melting point is the highest of them all, being over 1900° Fahr. Copper should be used very sparingly in bearings, and it generally is.

To prevent shrinkage of the bearing metal, add bismuth. Bismuth also reduces friction. It melts at a temperature of slightly over 500° Fahr. One of the objections to bismuth, though, is its cost, being over $2.00 per lb.

Occasionally, aluminum is mixed in bearing metals. It melts at 1160° Fahr., adds toughness and serves as a flux, but at the same time increases friction. One, therefore, cannot recommend a very liberal usage of aluminum or copper.

One peculiarity noticeable in the mixing of metals is that after being once melted and mixed, the melting point of the mixtures decreases. That is, the melting point of the bearing metal will melt at a lower temperature than the melting point of the highest of the original metals. Sometimes the melting point of the mixed bearing metal drops below

that of the melting point of the original whose melting point was the lowest.

Combination Welding

A WRITER in England, who apparently has had experience with all kinds of welding, states that no system of welding is applicable universally. He writes of tests that were made by manufacturers of cylindrical pressure vessels for withstanding high pressures. He states that the best results were obtained when the longitudinal seams were welded by means of the water-gas process, the branches by means of oxyacetylene, and the flanges and ends by means of the carbon-arc process.

Of course, it is impractical for most paper mills to be equipped with all kinds of welding apparatus, but anyway the above is instructive.

Cleaning the Image

WHEN things go wrong in the mill we are often inclined, if possible, to lay the blame on the shoulders of somebody else—not on ourselves. Sometimes we blame the THINGS themselves if we cannot blame the owner, manager, or superintendent.

Maybe, though, we ourselves are the cause of the trouble.

Let us assume, for example, that my face is dirty. Somebody has told me that it is dirty and to make sure and see for myself I look into a mirror and there, sure enough, I see the image of the dirt on my face. There is no question now but that my face is dirty.

What do I do to remove the dirt? Do I wash and polish the mirror? I do NOT. Doing that would only make the presence of the dirt more evident. I know that I cannot wash my image and get rid of the dirt. I must wash my face.

Similarly, it is always best to apply the preventive at the SOURCE. No matter what we do to the effect, the cause usually remains unaltered.

Thus in power plant practice one can chip scale until doomsday and it will keep right on forming in the boilers. To keep scale out of boilers the water must be treated—not the scale.

Black smoke may be pouring out of a stack. We don't make it white by adding smoke of a different color. We stop the smoke by burning coal properly.

If bearings insist on running hot all the time it would be foolish to constantly rebabbitt without applying oil.

When the engine knocks or the turbine vibrates we don't build a muffler around the engine or turbine to stop the noise. We search out the CAUSE and stop the noise at the SOURCE.

The images we see in the mirror of practice are usually the reflections of our own capability.

Cubes and Cube Roots

THIS simple scale will solve any cube root problem without the necessity of hand calculation.

For example, what is the cube root of 100?

Find the 100 in column (A) and the answer is instantly found in column (B) as 4.64.

The cube root of 200 is 5.85; the cube root of 1,000 is 10; and so forth.

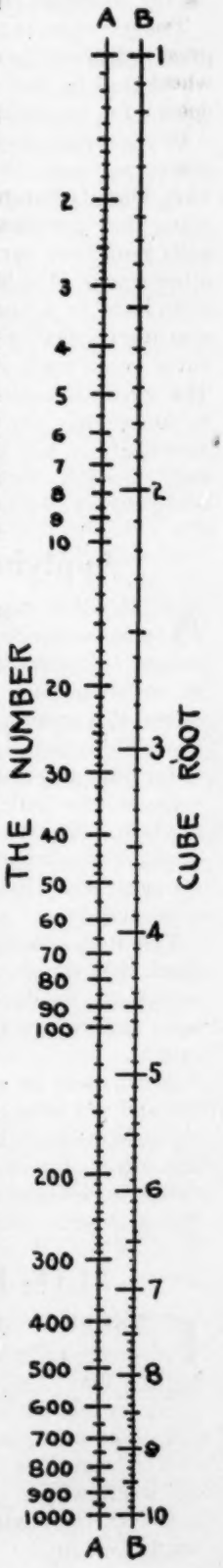
The same scale can also be used for finding the cube root of any number greater than 1,000, but one must watch the number of digits. Cube root always goes in "threes." Thus, if you want to find the cube root of 4,000, cut off three digits from the right and 4 remains. The answer will then be 15.9. The cube root of 4 is 1.59 and, therefore, for 4,000 the cube root will be 15.9.

To find the cube root of 60,000 or 60,000,000 the result is found opposite the 60. Thus for 60 the cube root is 3.92; for 60,000 it is 39.2 and for 60,000,000 it is 392.

For quantities less than one the method is similar. Thus the cube root of .001 is 0.1, the cube root of .02 is 0.271, and so forth.

In other words, when you move the decimal point three places to the right in column (A), it must be moved one place to the right in column (B). And when the decimal point is moved three places to the left in column (A) it must be moved one place to the left in column (B).

Also, the same scale may be used for finding the cube of any number. Thus, what is the cube of 3? Find the 3 in column (B). The answer, 27, is found opposite the 3 in column (A). Use the scale enough to become familiar with it and you will dislike hand figuring more than ever. It is not absolutely perfect, of course, but it is close enough for most practical computing purposes.



Glen Buck is wont to say: "Ignorance is never bliss,—but just hard work and low wages."

Tolerance in Ball Bearings

TO THE layman the accuracy required of the best ball bearings of today sounds almost impossible.

Twenty years ago a friend of mine tried to impress upon me the great accuracy of a 20-foot flywheel that he had seen. He said, "As it rotates it doesn't vary more than a half an inch."

Of course if it varied a half an inch it was decidedly inaccurate even twenty years ago. But today we have manufacturers of high grade machinery who, when they purchase ball bearings, specify that the balls must not vary more than 0.000025 inch. In other words, that is equal to "twenty-five millionths of an inch" or, a "quarter of a ten-thousandth." They also specify that the tolerance between the inner and outer races must not be greater than 0.0001 inch. The writer knows enough about fine machine work to know that the manufacturer who meets these specifications and in addition produces balls of correct strength, hardness, toughness and temper, is doing very well indeed.

Applying Belt Dressings

ALTHOUGH most belt drives are well enclosed by means of wire guards, and the danger of getting caught is much reduced, we still read occasionally of accidents such as the following. This one occurred in a small country town:

> "While putting some dressing on a belt one day this week, Jack Warren suffered a broken finger, the belt drawing the member into the wheel. Mr. Warren managed to jerk his hand out of the wheel, which was fortunate, as he might easily have suffered more serious consequences."

This item should serve as a warning to those who think they can do what they themselves would warn others not to do. Jack Warren has worked with belts and pulleys for many years, yet he finally got caught.

A safe way to apply belt dressing is to put it on the end of a stick and stand away at a safe distance. If the dressing is liquid, fasten a cloth at the end of the stick, dip in the liquid, and then apply. If "stick" dressings, fasten the "stick" to the stick. Never imperil your hands or arms.

CO_2 Problem Solved

IF THERE is a power plant engineer today who does not know what his CO_2 is, it is generally safe to say that one, two, or three unusual conditions exist, as follows:

1—The plant is exceedingly small and very little fuel is burned, so that the first cost of a CO_2 outfit is not worth while.

2—Or, the engineer's superiors refused to buy an outfit for him.

3—Or, the engineer is not well versed in modern power plant practice and does not know how desirable it is to always have the RIGHT percentage of CO_2 continually passing out of the chimney.

There are now so many CO_2 outfits on the market, selling at all prices from low to high, all the way from the well known orsat to the modern electric outfit, that it is indeed a small plant that cannot afford one. In other words, the CO_2 problem is solved for the engineer.

The latest device that has come to my notice was on display at the last Power Show in New York. It does not contain any chemicals, glass or delicate parts, small orifices, ink pens, running water, etc. Its operating mechanism consists of a standard motor and two fans which measure the CO_2 by comparing the force exerted on one fan by flue gas moving at high velocity, to that of air moving at the same velocity. Since CO_2 is 50 per cent heavier than air, the difference in weight is appreciable and when magnified by traveling at a high velocity can be indicated on a dial with great accuracy.

Babbitts and Babbitting

IN VIEW of the fact that from 20 to 30 percent of the power given up by engines and motors is generally absorbed by bearings in the form of friction, it is very important that the bearings be properly babbitted.

Each bearing, whether ball bearing, roller bearing, or plain, absorbs a certain amount of power. Multiply that power by the number of bearings throughout the plant and the total loss will probably astound you.

If they are plain bearings, do a good job of babbitting, then oil the bearings properly, and the difference in drag of each bearing will be immediately noticeable and probably measurable. Multiply that difference by the number of bearings in the entire plant and you have the total saving in power. The saving in wear due to proper babbitting is often just as important as the saving of power. Furthermore, the less the friction the less the oil consumption—another saving and often a very important one.

Of course, no surfaces are perfectly smooth. They may feel smooth to one's finger tips, but, nevertheless, under a magnifying glass the surfaces will be found to be decidedly rough with multitudinous small hills and valleys all over. The good babbitt metal is that metal which will produce a very smooth mirror-like surface on which the hills and valleys will be reduced to the very minimum.

Contrary to most beliefs, lead would make a very good anti-friction material if it weren't so soft. Its co-efficient of friction is very low and it can be plastered down so that the hills and valleys are almost invisible even under the most powerful microscope. To make the lead harder so that it will hold up the load, antimony is usually added. And then copper and tin are added to create both toughness and hard-

ness. In addition, tin acts as a solder in uniting all of the metals.

The purchaser of high grade machinery should see to it that no bearing in any machine is subjected to a load greater than 2,500 lbs. per sq. in. That, remember, is the very maximum. For ordinary operation keep the load below 1,500 lbs. per sq. in., and you can be pretty sure of long service provided the correct babbitt metal is used and provided the bearings are properly lubricated.

There is a babbitt commonly used known as "genuine babbitt," which is very strong and tough, being made up of 80-90 per cent of tin. But in modern bearings we seldom have anything but compressive stresses within the babbitt, so why should the babbitt contain so much tin? It may, therefore, be generally regarded as good practice to reduce the percentage of tin as much as possible. Bearing metals cost considerably less and naturally give better service if they contain a larger percentage of lead and just the right amount of tin. They will stand higher speeds and absorb less power. In a great many actual instances genuine babbitt bearings have given trouble and have been replaced by lead base babbitt and no more trouble has been experienced.

As for price, never buy a bearing metal on a cost basis. First think of the bearing—of the transmission problem, and then pick out the metal that best cares for the problem.

One's-Own-"Value Curve"

LIFE is not composed of money, but money is nevertheless generally taken as an index of a man's value to himself and to the world.

Assuming this state of affairs to be a fact, you can therefore easily plot your "value curve" on paper, and it may be helpful to you for prodding yourself on higher and higher.

On a horizontal line, plot your age in years. If you are forty years old there will be forty spaces. Vertically above each year plot the amount of your salary, or your income "earned" through your own personal efforts. Then draw a curve through those plotted points.

Does the curve go higher?

Does it go higher rapidly or slowly?

Does it go lower as you advance in years?

Does it remain constant?

This is not a sermon full of high-sounding phrases. It is just a suggestion—a would-be aid toward self-analyzation. Plot your own personal "value curve" and then ask and answer your own questions.

Don't Say "Belt Hook"

RECENTLY, for some unknown reason, the words "Belt Hook" are being used broadly as a name for nearly all kinds of metallic belt fasteners. It is a misnomer. A hook, according to my dictionary, is, "a piece of metal bent into a curve, so as to catch or hold anything." A "hook" does NOT punch the hole through which it hooks. The fish hook (and there is no question but that a fish hook is a hook) is probably the only exception. Most metallic belt fasteners are forced into the belt and in addition are made to do the holding. Belt fasteners are usually made up of a great many teeth, and each tooth does its share of the punching and the holding. "Belt Fastener" is a far better name than "Belt Hook."

Of course, when it comes to round belts, it is perfectly proper to apply the term "Belt Hook" to the single curved hook that is so commonly employed there, because that really is a "hook." It doesn't punch its own hole. It "hooks" the belt. It, and it only, so far as I know, is a "belt hook."

Ball Bearings Save Oil

IT IS known by most operators of bearings, I believe, that ordinary plain bearings must run on a light film of oil if they are to continue to operate for a considerable length of time. When properly lubricated, plain bearings are very durable. To maintain this oil film it is necessary to furnish a continuous supply in one manner or another and it is often necessary to replenish the oil at frequent intervals. It is almost impossible without the employment of certain high-cost oils to keep sleeve-type bearings properly lubricated without some oil running out and dripping onto belts, machines, floors and perhaps damaging products in process.

An advantage of ball bearings is that they are usually mounted in housings which have a felt washer at each end. Lubricant is kept in and dust and grit out. Every three or four months, a replenishing of lubricant is all the attention they require. Repeated tests and actual operating records have shown that ball bearings save as much as 80 per cent of the money spent for plain-bearing oil bills.

Five Ways to Stop Steam Losses

1—Inspect all steam traps weekly.
2—Check valve setting by indicator cards frequently.
3—Cut off all dead steam lines and test all valves for leakage.
4—Examine pumps frequently, particularly the water ends.
5—Be sure cylinder oil is functioning properly.

Five Ways to Keep Abreast of Recent Developments

1—Read, not only the feature articles, but the smaller news items in your trade journal.
2—Read advertisements of equipment, both magazine and direct-mail.
3—Afford every salesman an audience. Ask him questions.
4—Attend your national convention and power show.
5—Be receptive to new ideas.

—*Sibley.*

Editorial Comment

By WILLIAM SIBLEY

The Seventeen Points of Citizenship

IN a recent issue of the Manufacturers' Record there appeared the seventeen points of the duties of citizen as outlined by Judge R. Eve in a charge to the Grand Jury of Tift County, Georgia. So eminently worth while are those points, we find pleasure in republishing them here:

A Citizenship Creed

1—To acquaint myself with the fundamental principles of the Constitution and laws of the United States and of the state of which I am a citizen.

2—To inform myself on public issues and the character of all candidates; then to speak and act as a patriot.

3—To vote in all elections according to the dictates of an enlightened conscience.

4—To become an active member of some political party pledged to the highest and best in public service; to hold my duty as a citizen above party lines.

5—To hold the faith "that right makes might" and in that faith dare to do my duty as I understand it.

6—To play no favorites; to stand for the vigorous and impartial enforcement of all laws.

7—To obey all laws myself and expect others to do so; to uphold officers in the enforcement thereof.

8—To work openly and vigorously for the repeal of all useless and unjust statutes.

9—To stand as a ready soldier, an honest taxpayer, a willing and impartial juror, a faithful though inconspicuous public servant.

10—To know my government; to impart that knowledge; to realize what that government does for us all, and to understand what we should do for it.

11—To encourage good men to enter and remain in public service. To serve myself when called.

12—To stimulate patriotism, good feeling and loyal co-operation among all classes of our citizens.

13—To strive against all efforts to arouse race, religious, class or sectional hatred.

14—To let my knowledge and interest follow my country's affairs around the world.

15—To know that I am bound to my state, my nation and to humanity, and they to me.

16—To openly oppose and denounce the traducers of my country's institutions and the slanderers of her public servants.

17—To carry to the foreign born and the affiliated, within our shores, the message of Americanism.

There is nothing contained in the above that is not self-evident or which will not be accepted by all right-minded men. May we suggest this Creed be republished in your own house organ, or printed attractively and posted on the bulletin boards of your establishment, or used as a stuffer in pay-envelopes. Only to Judge Eve is credit necessary. The offering of these points to your personnel may dispell confusion in some mind or awaken in another the realization of just what constitutes good citizenship. The better citizens the members of your personnel become the better workers you will have.

A Shortage of Executives Impending?

THERE are approximately 300,000 large and small manufacturers in the United States. Accurately compiled statistics reveal the startling fact that less than one-half of all these companies ever make one per cent in profit, and that less than 10 per cent of them know what are their actual production costs.

As long ago as October of last year, the National Industrial Conference Board predicted a shortage of between 150,000 and 200,000 trained industrial executives by the year 1930. This report further stated that in that time there will be less than 50,000 men who will have received sufficient training to enable them to capably take over the management of the various industrial properties.

Is not this prediction already meeting with fulfillment if only by reason of the large number of mergers that have been consummated during the past year? To entertain the combination of companies is not necessarily an indictment on the management being absorbed, but it must be self-evident that the company which is making a good profit and which has a healthy prospective future is less willing and likely to merge with another company (except as the dominant party to the combination) than the "weak sisters" who might welcome such combination in the interest of their own dividends.

The large number of industrial mergers that have been completed during the present year is perhaps the most notable feature of recent industrial history. On every side and in every field both large and small combinations have been effected. More are planned, so that this general trend may be expected to continue throughout the ensuing year. In such mergers, one president, one secretary, one sales manager, one board of directors, and so forth, take the place of two. While this process results in a direct saving to the combined companies, it simultaneously imposes upon the individuals a much heavier burden of responsibility. Because of this trend there are new opportunities for men endowed with the vision and capacity to successfully pilot these enlarged undertakings.

Not only because of the present vogue for combination, but also because industrial establishments are steadily growing in size, importance and influence, there is an increasing demand for men of this high type. Because such men are not available for the asking, corporations will find it very much worth while to select a number of young men from their own organizations, pay them enough to retain them, then enter them upon an intensive training campaign.

—— on Timely Subjects

This might better be done without the definite knowledge of the young men, but where the reasons for the methods are necessarily apparent, the men in training should be assured that the first sign of inability or unappreciativeness will immediately bring to an end their probationary period.

In the Chicago district there is a large manufacturer of material handling equipment. In this organization, which has steadily grown for forty or fifty years, are now seven or eight manufacturing plants scattered throughout the country and a large number of branch sales offices. The president of this organization, up to a couple of years ago, had retained full executive charge for more than fifteen years. Recognizing that he was passing the 64-year mark and that within a few years he would be wishing retirement, he selected the most promising of the younger executives, and, with the permission of the Board, made the young man (twenty years his junior) the president. In order that the reins might not be taken from the old and experienced hands too quickly, the retiring president assumed the title of "chairman of the board." The training the young and capable man will receive under the tutorship of the old and experienced executive will doubtless provide the corporation with a thoroughly capable directing head by the time the "chairman" wishes to devote more time to golf than to business.

"One man organizations" invariably crumble with the passing of the one man. Policies similar to the one outlined might well be adopted by many organizations.

Conversation

IT was Colton who said, "Conversation is the music of the mind." A sort of intellectual orchestra, he styled it, wherein all the instruments should bear a part, but none should play together. We do not believe Walter Colton, who graduated from Yale in 1822, would apply such a definition today. His defining fixes a standard for mental intercourse far above that which is commonly reached today. Doubtless were Colton writing of 1926 instead of 1826, he would have said conversation was "talk," for such it is with the majority of us.

Talk that is cheap and empty has supplanted true conversation with all but a very few. Conversation is on the wane. It is as out of date as bustles and as infrequently heard as the Indian tomtom. Conversation is a lost art. No longer do people converse for the interchange of ideas. Rather, endless petty discussions of personalities seem to be the only fruition from the expressed ideas of former times.

We of today would so much rather know what kind of fish the President caught than to learn what he said in his latest address. The recent attempts to swim the English channel concern us more than the recent attempts to save the French franc. Rudolph Valentino's banalities occupy a larger place in our thoughts and thought expression than does the earnest effort of General Dawes to bring about a revision of archaic senate rules. Given the batting average of Babe Ruth, or the running time of Bubbling Over, and we yawn at persons interested in perpetuating our unexampled history in such form as to make it readily available to posterity. The crafty dodging of Dempsey seems of greater moment than the African jungle successes of Carl Ackley. Who wants to discuss the agricultural situation or the constant encroachment of government into private industry, when we can sing about animal crackers?

Try to advance some sound information on a present day problem when paying a social call and some member of the group will turn on the radio. Ideas are passe. To suggest in conversation with one's neighbor that everything in the world is not for the best, or that something might better be changed, means to make of one's self one of three things: an unutterable bore, a calamity howler or a radical. To be popular, particularly among youth, one must chatter personalities endlessly and always personalities. To speak of Goodspeed's translation of the Bible is to draw the sole reward of a vacant stare, but to mention Douglas Fairbanks or to recount Fawcett's latest froth brings an eye sparkle and a continuation of the subject.

We are of the opinion that all this is the inevitable concomitant of too much printing. As a nation we are being published into mental senility. Paper and ink are so cheap today, and the processes of printing so automatized, that the publishing industry now ranks fifth among all industries in the United States. Result? Hundreds of thousands of the hundreds of thousands of newspapers, magazines and periodicals that are daily, weekly and monthly foisted upon the long-suffering public, are either left unread or accorded a very superficial attention. So much to read is there that one cannot read what one's neighbors or friends are reading. As a consequence, when you talk of what you have read you are talking on a subject strange to your companion. Being strange, it bores him. Sensing the boredom, you withdraw the subject and start on golf or one-piece bathing suits merely to be mutual.

Abraham Lincoln's early library consisted of three books: one on American government, Bunyan's Pilgrim's Progress, and the Bible. And he was as well (or better) supplied as the average 1825 citizen. People in those days read the same thing, studied the same speeches. They did this because there was only one thing to read and only one speech to study. This made subjects of conversation mutually interesting, and rendered conversation the interchange of ideas.

We cannot help but wonder if our superabundance of literature, good and bad, our superficial knowledge of things, and our very apparent lack of sound ideas do not, or will not, lead to superficial thinking and shallow reasoning. Certainly the habit of superficial reasoning, if become a national characteristic, possesses enormous potentialities for harm—contributes nothing to either individual or national welfare.

Hammermill Bond Agents Entertained

Transact Business, Enjoy Sports and See a Great Motion Picture of Papermaking Processes

THE executives of paper houses throughout the country who distribute the lines of the Hammermill Paper Company met in annual conference at Erie, Pa., for the fifteenth consecutive time on August 25, 26 and 27, 1926. They came from New Orleans, Atlanta and Richmond in the South, and from western centers like Lincoln and Omaha, Neb., Minneapolis and Duluth; while the middle west and eastern seaboard was also well represented. The Advisory Committee of the conference is made up of ten members as follows: Ross P. Andrews, R. P. Andrews Paper Company, Washington, D. C.; George McKinney, F. A. Flinn, Inc., New York; J. B. Jones, Western Paper Company, Omaha, Neb.; W. G. Cleveland, B. C. Palmer & Co., Ltd., New Orleans, La.; Frank E. Floyd, Crescent Paper Company, Indianapolis, Ind.; Thomas R. Fort, Jr., Thos. W. Price Company, Philadelphia; R. L. Tillman, Beacon Paper Company, St. Louis, Mo.; John D. Swigart, Swigart Paper Company, Chicago; W. B. Stevenson, Storrs & Bement Company, Boston, Mass.; Harold Zellerbach, Zellerbach Paper Company, San Francisco, Calif.

Motion Picture of Papermaking

At the Perry Theater in Erie on the evening of the opening day of the conference, the members and visitors were treated to a moving-picture exhibition of manufacturing operations at the plant of the Hammermill Paper Company that far exceeded in educational value any cinematographic representation of the operation of pulp and paper manufacture that has been hitherto produced. The points in which this motion picture appears superior to similar films consist of animated visualizations of what takes place in the hidden parts of machinery, as in the interior of a digester, for instance, where the packing of it with chips is seen as the chips flow in a steady shower from the chip loft above, followed by the introduction of liquor and bringing to pressure with steam and the final blowing of the pulp. Worthy of special praise are some admirably executed photomicrographs of fibers as they look immediately after cooking, as well as following beating and jordaning.

Another excellent animated picture which preceded the representation of cooking the chips was the operation of the chipper, the action of the knives as they whirl against the end of the log being distinctly shown. This is an operation that is not always understood clearly even by the men in the mill and it was, of course, greatly appreciated by the Hammermill employees and their families, who, with the members of the Hammermill agents' association, filled the theater to capacity and formed a most interested group of spectators.

The five-reel motion picture, which was made for the Hammermill Paper Company by Underwood & Underwood, New York, was more than a mere formal representation of working scenes in and about a pulp and paper plant. The entire conception was characterized by an artistry of design and an exercise of the imaginative faculty that lifted it far above the ordinary industrial film.

The residence of Ernst R. Behrend, president of the Hammermill Paper Company, is shown in the opening scene. On a grassy lawn in front of the house, Moritz Behrend, son of the president, is seen operating a typewriter. After hammering out a few lines, he removes the sheet from the machine, reads it over and then crumples it up and throws it away with an evident air of dissatisfaction. As he is doing this for the second or third time, his father appears on the scene, walking down the steps of the house accompanied by his favorite dog. He takes a seat on the lawn opposite his son, regards him quizzically for a moment or so and then remarks, as he observes the boy's thwarted look, "What's troubling you, Moritz?" to which he gets the response, "Oh, I've got to prepare an essay for school on a romance of business, and I don't seem to be able to find the right subject." At this point his father picks up one of the discarded sheets of paper and suggests to him that there is as much romance to be found in a sheet of paper as can be found anywhere. As he extends his arm and points to a spot in the distance, the picture dissolves and the exterior of the Hammermill plant then comes into view.

This is the starting point for a splendid educational survey of operations at the plant of the Hammermill Paper Company. The producer of the series of pictures has shown extraordinary ability in labeling the technical operations, or in choosing captions, as the motion-picture men would call it. This is particularly well brought out where the beating process is shown and the action of alum in "curdling" the size is explained. Several department scenes are flashed on the screen. In one of these Dr. Bjarne Johnsen comes into view for a moment to receive a report from one of his assistants on the result of a test. The photographic effects are unusually excellent in all cases and reflect credit on Underwood & Underwood.

The picture begins with the unloading of pulpwood at the dock, which is followed by views of barking and sawing the logs, cutting the wood into chips, cooking, screening and beating, all with a wealth of detail by means of animated inserts that tells the story better than a trained guide could tell it in showing a visitor through the plant. The paper is finally shown as it begins to form at the couch roll of the fourdrinier machine as well as in its passage over and around the dryers.

The picture begins and ends on the lawn in front of the Behrend home, the closing view showing a boy apparently entranced with the new subject for his proposed essay on "The Voice of Business—A Romance of Paper." Moritz gives a most natural representation of a boy struggling with a theme for an essay and there is no suggestion in the picture that he is playing a part, surely a triumph for a young actor, for the supreme art is the concealment of art.

It is intended to show the picture on the educational circuit, in schools, in Y. M. C. A. classes and wherever else interested audiences may be found.

Business of the Conference

All business sittings were held at the Kahkwa Club, situated some thirteen miles west of the city of Erie, where the members and visitors were taken each morning in automobiles and returned to the Lawrence Hotel, Erie, in the evening. At this delightful country club, the Hammermill Paper Company proved to be the most genial, delightful and hospitable of hosts; luncheons and buffet suppers were served during the time of the conference and golfing and bowling-on-the-green were open to special guests, like the representatives of the trade press who took no active part in the business discussions.

The program of meeting this year was changed in some respects from that of previous years. Instead of the usual two afternoons being devoted to outdoor sports and recreation, the schedule of events was confined to the afternoon on the last day of meeting and after the business sittings had terminated.

Prize Winners

Prizes were awarded to those who showed highest proficiency at golf, quoits, and bowling-on-the-green. In the Kickers' Handicap at golf, E. R. Carpenter won first prize of a leather golf bag, with a low score of 74. Mr. Carpenter is connected with the Dwight Bros. Paper Company, Grand Rapids, Mich. Second and third prizes fell to D. S. Leslie, of the John Leslie Paper Company, Minneapolis, Minn., and W. B. Stevenson, of Storrs & Bement Company, Boston, respectively, a pair of golf clubs being awarded to the first-named and a dozen golf balls to Mr. Stevenson. At putting, R. S. Bull, of Bradner Smith & Co., Chicago, carried off first prize of a silver flask in leather case, while on a draw F. F. Fox, of the Crescent Paper Company, Indianapolis, got second prize of a dozen Silver King golf balls. At driving,

R. S. Bull was the winner of a leather coat. The low gross (92) brought Albert M. Miller, of the Central Ohio Paper Company, Columbus, Ohio, the prize of a silver putter, while the low net winner of a pair of clubs was W. N. Schaefer, of R. P. Andrews Paper Company, Washington, D. C., with a score of 73, George S. Johnston being second prize-man in this event and the winner of rickey sticks with 74 to his credit. A. W. Leslie, of the John Leslie Paper Company, Minneapolis, carried off first prize at quoits, a humidor; G. R. Likins, of the Springfield Paper Company, Springfield, Mo., stood second and was awarded a whist set. At bowling-on-the-green, W. A. Rhodea, of the S. P. Richards Company, Atlanta, Ga., won first prize of a set of dominoes, and A. C. Thomas, of F. A. Flinn, Inc., New York, was second and received the award of a humidor.

Preliminary Report on European Trip

OF O. M. PORTER
Asst. Sec., American Paper and Pulp Association

THE following paragraphs tell briefly of my recnt trip to Europe and may serve in a measure at least to indicate the value to the American Paper Industry of frequent personal contacts with leaders of the pulp and paper industry abroad.

Our first objective was the World Forestry Congress in Rome, the object of which was to provide facilities and opportunities for the nations of the world to collaborate, through personal contact of their leaders in the profession, in the advancement of the science, practice and statistical records of forestry as the means of insuring a permanent supply of wood, water and other forest products.

The Congress was attended by more than 800 delegates representing some sixty nations. It was well organized, perhaps too well, under the efficiency of present Italian control. At least 250 separate reports were presented in pamphlet form during the five days of the conference, with more or less complete resumes by their authors or representatives, many of which were translated on the floor of the Congress into French, Italian or English and, occasionally, German.

Among the outstanding results of the conference might be enumerated the following:

1—Development of machinery for permanent international forest statistics.

2—Exchange of technical data on forest administration, management, protection, production, taxation, etc.

3—Study of uniform terms, measures and customs in international trade in forest products.

4—Co-ordination of efforts by the forest experiment stations of the world.

As the official representative of the American Paper Industry at the conference, I took opportunity to speak briefly on the place and work of the American Paper and Pulp Association and offered attending delegates our cooperation in study of common problems.

Naturally, the attendance at the congress permitted visits to the relics and records of antiquity for which the Eternal City is so famous. We found Rome delightful, its people courteous, and everywhere evidence of the constructive work of His Excellency, B. Mussolini.

France

From Italy, I went to France and revisited some of the scenes of our military logging operations in 1917-19. At that time the French forests were being cut at least ten years in advance of their normal cutting cycles. The present operations are about normal with everywhere, of course, evidence of the meticulously careful forest practice of France.

I found the French Paper Industry in pretty fair shape with the exception of common print papers and the uncertainty being experienced by all industries in France on account of the falling franc. There is considerable new construction in France, both domestic and industrial, but unfortunately the French people generally seem to have lost their natural thrift and in common with other European debtor nations now cordially dislike America. We are not popular over there and it is at least a question as to when this general dislike caused by our post-war prosperity and subsequent debt negotiations will develop into more intense bitterness, particularly if the final settlements impose heavy annual payments lasting over three generations.

Germany

We were agreeably surprised to find at least that portion of Germany with which we came in contact sturdily and industriously working to put Germany back on the map. The cities were clean, the people courteous and, above all, busy.

Unfortunately, I did not have an opportunity to visit many mills in Germany but gathered that business in general was fair, with the smaller mills suffering from raw material competition with Switzerland and more extensive organizations of Germany pulp and paper mills. That technical control, painstaking research and industrial and commercial application which enabled the former central powers to so successfully and persistently withstand the nations of almost the entire world, were evident in the operation and administration of the large plants at Mannheim where I was so courteously received by the mills' executives, the Doctors Clemm.

The Reds, with their distinctive arm-bands and clenched-fist emblems, were considerably in evidence, particularly in Berlin on Whitsunday and its following Monday holiday. It is doubtful, however, if even that influence can prevent the German people from re-establishing their national position through persistent effort and general thrift.

In Germany, as in the northern countries visited later, I was impressed by the fact that the leaders of the industry and government officials recognize one organization only as representing the paper industry of the United States—The American Paper and Pulp Association—and further, that it would be to our benefit to encourage that recognition by persistent friendly co-operation with the organizations representing the German industry and their executives and technical men visiting our mills.

A very brief visit to the Black Forest of Germany at Forbach impressed me with the efficiency and permanency of their forest operations and their possibilities of sustained yield production.

Norway

From Berlin we went to Oslo, Norway, where we were cordially received by Mr. E. Jordan and Captain C. F. Michelet, secretaries of the Norwegian paper and pulp associations. Limited time prevented more than brief conferences with pulp and paper manufacturers in Oslo, but I gathered that, despite the English situation, the Norwegian pulp mills, as those of Sweden and Finland, were enjoying very material prosperity, but that the paper market situation was less favorable.

The trip from Oslo to Tronjhem, on the west coast of Norway, was interesting in that it offered at least glimpses of the charm and variety of the Norwegian scenery. Everywhere farms and forests showed evidence of careful cultivation. The train passes from fertile valleys, up through the river and lake country and across bleak areas high above timber land, where, at the small villages, the entire population comes to meet the infrequent trains.

Sweden

Perhaps nowhere abroad are our associations of the paper industry so well and favorably known as in Sweden, particularly the American Paper and Pulp Association and its officers and executives. There, as in Norway and especially in Finland, every possible arrangement had been made by the officers of the pulp association to facilitate our visits to mills and forest operations. We are especially indebted to Chr. Storjohann, A. Herlenius, Baron Mannerheim and Consul T. Lundgren for the opportunities offered to visit their forests and mills.

I took every opportunity in Norway, Sweden and Finland to suggest informal conferences between our pulp and paper manufacturers and theirs for the purpose of developing acquantance and thus promoting that confidence which is so essential to permanently satisfactory international business relations. Both we and they have much to gain from such conferences which would provide opportunities for discussion of common problems, such as forest management, costs, engineering practices, statistics of production and demand, in-

ternational trade, etc. It is possible that, as a result of our efforts, our manufacturers may be invited to participate in such a conference to be held in Stockholm next spring.

The pulp and paper industry of Sweden has come as a natural development following the iron and lumber industries. There is a very practical, successful coordination of the sawmills and pulp industries in Sweden and perhaps especially in Finland, where I visited one sulphate mill which did not have a stick of round wood in its yards, its raw material and fuel coming by aerial conveyor in the form of chips from a saw-mill two miles away.

Aerial conveyors for the transportation of raw materials and finished products, are used very extensively in the paper industry there, with efficiency and economy. The Swedes have gone far in technical control for quality and uniformity of product. Their mills would be of interest to our executives and engineers in that they have experimented with and perfected many processes and types of equipment that might be used to advantage in this country.

Sweden is a beautiful country with productive farms and well managed forests where the annual growth only is cut and every effort made to bring each acre into the highest possible production of species or products for which it is best suited.

Naturally, as a forester, I was very much interested with the extent to which the Swedish pulp and paper mills are practising forestry to insure themselves a permanent wood supply. The forester plays an important part in the company's administrative policy, as it is upon his knowledge and practice that permanent operations are possible. We are about 100 years behind the Swedes in the use and care of our timber lands and in the co-ordination of our wood using industries.

Finland

Finland is a young country, at least in its present national unity and freedom from Russian control. It has extensive forests of pine and spruce and rich, but apparently only partly cultivated, farm land. In contrast with Sweden, at least, pulp and paper companies in Finland may still buy forest lands, but in common with Sweden and Norway, their national and private forests are being carefully managed, with sustained yield the predominating idea.

A recent government survey has given the Finnish foresters and industrial leaders the facts as to extent, character and growth of Finland's forests, so that they can correlate the development of their wood-using industries with the productive capacity of their timberlands.

With but one exception the Finnish pulp mills all market their products through a central association under the capable administration of Mr. Walter Grasbeck. This system is effective there and permits much closer control of conditions within the industry than is possible under our present Federal anti-trust laws.

Summary

In brief, therefore, my trip served to renew and expand the Association's personal foreign contacts, to further the idea of informal internal conferences of pulp and paper manufacturers for the discussion of common problems, to insure acceptance by the Scandinavian associations of our Joint Committee's proposed rules for weighing, sampling and testing of wood pulp, as well as recognition of the chemists approved by the Committtee for such work, to secure specific information requested by members of the Pulp Producers Association, the Supply and Equipment Association, as well as the American Paper and Pulp Association and its affiliated organizations. It also enabled the paper industry of the United States to be represented at the first International Forestry Congress, and finally, it gave me the privilege of foreign travel and inspiration for more effective association service to the American Paper Industry.

Gerald Swope, president of the General Electric Company, recently announced a further reduction in the prices of Mazda lamps, effective since September 1, 1926, amounting to about 7 per cent on the sizes generally used of the new standard lines of lamps and approximately 5 per cent on all types. This is the eighth reduction of Mazda lamp prices since 1920.

Fall Meetings of the American Pulp and Paper Mill Superintendents' Association

The first meeting of the fall sessions of The Superintendents' Association are fast assuming their final arrangement and below is given the time and place of those now arranged.

Western Board and Michigan Divisions

A joint session of the above will be held on Friday, September 24th, at the Post Tavern in Battle Creek, Michigan.

An interesting program of interest to all members of these divisions is being prepared by the committee in charge, and will be published in a later edition of this paper.

Further information with regard to this meeting can be obtained from William H. Sievert, secretary-treasurer Western Board Division, care Michigan Carton Co., at Battle Creek, Mich., or from Alfred E. Bryant, secretary-treasurer of Michigan Division, care The Bryant Paper Co., Kalamazoo, Mich.

Miami Valley Division

The first fall meeting of this division will be held on Saturday evening, September 25th, at the Manchester Hotel, Middletown Hotel, Middletown, Ohio.

The main topic for discussion at this meeting will be on the subject of "White Water," and it is hoped to have an interesting paper and moving picture of a recent installation of a pulp saving machine.

The annual election of officers for the ensuing year will also be held at this time. H. W. Server, John MacMurray and Jack Smith were appointed nominating committee.

Northeastern Division and Connecticut Valley Division

The program and entertainment features for the joint session of the above divisions, which is scheduled to be held on Saturday, October 2nd, at Lincoln, N. H., is nearing completion, and from information already received it promises to be a big and interesting session for those of the New England territory. Herbert W. Stanley of The Parker-Young Co., at Lincoln, N. H., is secretary and will be glad to forward information to any interested person.

Northern New York Division

This division has selected Saturday, October 9th, and the Onondaga Hotel at Syracuse, New York, as the time and location for the meeting.

The New York State College of Forestry is located at Syracuse and this city is very central to many of the mills in northern New York and should draw a large attendance of superintendents and others who are interested in the educational features of the pulp and paper industry as well as forestry.

Frank A. Johnson, of the Diana Paper Co., Harrisville, N. Y., is secretary and William Brydges, of The Defiance Paper Co., Niagara Falls, N. Y., is chairman.

Northwestern Division

Saturday, October 16th, and Green Bay, Wisconsin, has been selected by the committee for this meeting.

The program and entertainment will be arranged by David B. Davies of the Hoberg Paper and Fibre Co., of that city, and his co-workers.

Harold A. Skinner of the Marathon Paper Mills at Rothschild, Wisconsin, is secretary-treasurer of this division.

Southern Division

This division has not definitely selected the time of their meeting on account of the absence of the chairman, R. H. Laftman, who has been on a trip to foreign cities.

It is hoped that the meeting can be held during the month of November and Bogalusa Paper Co. at Bogalusa as the place.

Southeastern and Pennsylvania-New Jersey Divisions

Owing to the absence on vacations of many of the officers of these divisions, definite information cannot be given as to the time and place these divisions will hold their meetings, as no information has been received at the office of Robert L. Eminger, national secretary.

R. S. Kellogg, secretary of the News Print Service Bureau, and W. G. MacNaughton, secretary of the Technical Association of the pulp and Paper Industry, spent most of August on a long and comprehensive inspection tour of the western and Canadian paper mills.

Preparation of Alpha Cellulose

At the Golden Jubilee meeting of the American Chemical Society held at Philadelphia, September 5 to September 11, 1926, the Division of Cellulose Chemistry held meetings in the Harrison Laboratory on Tuesday, Thursday and Friday, September 7, 9 and 10. The meetings were presided over by H. LeB. Gray, chairman, and L. F. Hawley, secretary. At the opening meeting on Tuesday, an important paper on alpha cellulose was presented by Dr. J. H. Ross, a member of the staff of the Forest Products Laboratories of Canada, his paper forming a study of the conditions which govern the test for alpha cellulose.

In a historical summary which prefaced a description of work done at the Forest Products Laboratories in Montreal, Doctor Ross stated that the mercerization test for the determination of alkali resistant cellulose originated in the laboratories of Cross and Bevan in the year 1892. The test was based on the assumption that a normal cotton cellulose did not lose weight on mercerization. The details, published in Cross and Bevan's **Cellulose Researches** (111 p. 23) were of little aid in carrying out the test. The first routine method was published by Jentgen in **Kunststoffe** in 1911. This is known as the "Alpha Cellulose Test."

Alpha cellulose was defined as the residue left after the extraction of a pulp with a moderately concentrated solution of caustic soda. It was thought that this extraction gave a pure product and in this way arose the confusion between it and cellulose as typified by cotton. A better definition of alpha cellulose designates it as that portion of the pulp which is insoluble in caustic soda solutions from 0 to 17.5 per cent after thirty minutes mercerization at 10° C. in 17.5 per cent lye. This is Schwalbe's method. Another method devised by Bubeck considers 8 to 9 vol. per cent as the concentrations where insolubility is most complete.

The alpha cellulose value of a pulp was stated by Doctor Ross to be the per cent of bone-dry residue based on 100 grams of bone-dry pulp.

The quality of a pulp is supposed to be indicated by its alpha cellulose value. In the manufacture of viscose, it has been used as a test of purity but cannot be used by itself to foretell the behavior of the pulp toward this process. Whether this is a natural limitation of the test or a sign that it is still to be perfected remains to be decided, according to Doctor Ross.

The numerous modifications of the Jentgen method have led to confusion between buyer and seller and this became so serious in Germany that a committee was formed to examine into the matter. This committee reported that the Jentgen procedure was for the moment the best to adopt. This report is to be found in **The Papier-Fabrikant** (1925, 23, p. 697) and from the data, Doctor Ross said the following conclusions might be drawn:

1—Any single operator can obtain on the same pulp results which check closely if he will confine himself to one method.

2—Several operators will not obtain the same average value for the same pulp by the same or by different methods.

3—The different methods give different values for the same pulp.

4—When an operator obtains high results on a pulp by one method the chances are that he will obtain high results by the other methods.

As it appears to be recognized that uniformity of result is impossible to be obtained, the Forest Product Laboratories of Canada undertook to determine the effect of variation in the conditions under which the test is carried out and to evolve a routine which on the same pulp would give close agreement between the results of several operators. A satisfactory definition of alpha cellulose had to be arrived at. The definition and method of testing outlined in Doctor Ross's paper are as follows:

"We presume to call alpha cellulose the residue remaining undissolved after two hours maceration at 20° C. of 3.5 grams of air dried pulp in intimate contact with seventy cubic centimeters of a solution containing seventeen and a half per cent by weight of pure sodium hydroxide and which will remain undissolved after removal of the bulk of the mercerizing liquor and a further dispersal of thirty seconds' duration in 100 ccs. of the same strength. The residue should be insoluble in hot dilute acetic acid followed by hot water.

"The test requires the following operations:

"1—The pulp is macerated in caustic soda solution.

"2—The caustic soda extract is removed.

"3—The residue is acidified, washed, dried and weighed.

"For duplication of results these operations must be governed by certain fixed conditions. There are besides several factors which might influence the yield of alpha cellulose."

Further details of the method were given, such matters being considered as moisture content, state of disintegration, temperature of contact, ratio of pulp to solution, concentration of sodium hydroxide, temperature of mercerization and length of the mercerization period, the removal of the caustic soda extract and acidification, drying and weighing of the pulp.

Prof. Harold Hibbert, of McGill University, said the method as outlined would be recommended for adoption by the Canadian Pulp and Paper Association, and he accordingly urged a free discussion of the paper. It was announced that the paper would be considered by a special committee on alpha cellulose and reported upon at a later sitting.

Sir James C. Irvine, of St. Andrews University, Scotland, the world's foremost authority on cellulose chemistry, brought the afternoon proceedings to a close with an address on "Constitutional Distinction Between Starch and Cellulose."

Large Attendance Seen for Tappi Meeting

From the number of advance registrations, the attendance at the fall meeting of TAPPI in York, Pa., September 14, 15 and 16, will be large.

The Local Committee requests that all those who are planning to attend send in their reply cards as early as possible so that the necessary arrangements can be made.

Among those who will be guests of the association are—Mr. Hugh P. Baker, secretary of the American Paper and Pulp Association, and Mr. A. M. Miller, president of the National Paper Trade Association.

The Safety Congress at Detroit

How members of the paper and pulp industry have managed to make such fine accident prevention records will be told at the sessions of the Paper and Pulp Section of the National Safety Council at its fifteenth annual congress, which will be held at Detroit, Michigan, October 25 to 29 inclusive.

Some really excellent talks by members of the Council have been planned for this meeting, among which are the following: "The A B C of Paper Mill Safety Organization," by G. B. Phillips, Champion Fibre Co., Canton, N. C.; "Safety Plant Mind," by M. Harrison, Hammermill Paper Co., Erie, Pa.; and "The Old and New in Paper Mill Safety," by Jacob Kindelberger, Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.

It is also planned to present the loving cup awarded by The Paper Industry for the best safety record in the membership of the Section, six months, January-June, 1926, at the luncheon Wednesday noon, October 27, 12:30 o'clock at the Book-Cadillac Hotel. This plan, however, is contingent upon the event that there has been at that time a clear winner to the cup determined upon. At present there are two mills with perfect accident records since the first of the year.

New Association of Paper Merchant Salesmen

A new association of paper salesmen is in process of formation in New York City, the membership of which will comprise salesmen connected with paper jobbing houses. The originator of the plan to organize the association is A. Price Dillont, of Bulkley, Dunton & Co., 75 Duane street, New York, a salesman widely known in the trade in the metropolis, who is of the opinion that such an organization can be of much benefit to the paper trade at large as well as to the individual salesman who spends his time "on the street" selling paper to printers, publishers and other actual consumers.

A meeting was held at 85 Worth street, New York, recently at which the plan to organize was put before a fairly large and representative group of paper salesmen. The idea was received with enthusiasm, and a temporary organization was formed with Mr. Dillont elected temporary chairman, and

Q. P. Emery, of the Kenelly Paper Company, New York, temporary secretary. Mr. Dillont addressed the meeting, outlining the purposes of the proposed association, and C. Frank Crawford, vice-president of the Employing Printers' Association, also spoke. As Mr. Crawford is a well known and successful organization man, his talk was very helpful and instructive and appealed strongly to those present, containing as it did some excellent advice.

A committee also was appointed, consisting of B. F. Brown and W. H. Feskitt, who, with the temporary chairman, will draft a constitution and by-laws. Upon the completion of the by-laws another meeting will be called at which the new organization will be completed.

"There is a great need for such an association, and there is no doubt it could effect a great amount of good to paper salesmen connected with jobbing concerns and to the trade," said Mr. Dillont. "Personally, I am merely taking the lead in organizing the jobbing salesmen; once the association has been completed and is in running order I want to step down and let others in the trade take up the reins and develop the organization. At first the association will be somewhat of a local affair, consisting of salesmen connected with New York paper jobbers, but later we hope to have members in cities all over the country. The new association will not conflict in any way with any other organization in the paper trade; it is true there is already a paper salesmen's association but its membership comprises mill salesmen, whereas the new association will seek as members only salesmen with paper jobbing concerns. There is a lot of work that can and should be done among the paper salesmen and only through proper co-operation and organization can this work be done effectively and efficiently."

Next Meeting of the Paperboard Industries Ass'n

The next meeting of the Paperboard Industries Association will be held at the Congress Hotel, Chicago, Wednesday, September 22 and Thursday, September 23, 1926.

On Wednesday, September 22, there will be a meeting of the Folding Box group in the morning, beginning at 9:45 o'clock, and of the Paperboard group in the afternoon, beginning at 2 o'clock. The Container group meeting will be held on Thursday morning, September 23, beginning at 9:30 o'clock, and the General Meeting of the three groups will convene in joint session at 2 o'clock on Thursday afternoon.

A meeting of the standing committees will take place at 11 A. M. on Tuesday, September 21, in Rooms 1120, 1124 and 1128; the executive committee will convene in Room 1120 at 2:30 o'clock P. M. of the same day.

New York U to Offer Accident Prevention Course

In an effort to check the rising tide of industrial and public accidents and in response to the demand from all parts of the country for trained leaders in safety work, New York University, with the co-operation of the American Museum of Safety, will offer during this month the first collegiate course in accident prevention, it was announced recently by Arthur Williams, president of the American Museum of Safety.

"The fact that most accidents are preventable was demonstrated eighteen years ago," Mr. Williams said. "The methods of preventing accidents, both in industry and in communities, have become thoroughly standardized and detailed information concerning these methods—the combined experience of hundreds of companies and communities which have succeeded in reducing accidents from twenty-five to seventy-five per cent—is available to anyone. The need now is for men and women with the qualities of leaders and organizers, and with the training of safety engineers and public safety directors such as will be offered by New York University."

The course in accident prevention will be given under the direction of C. W. Price, vice president of the Elliot Service Company, formerly general manager of the National Safety Council and director of safety in the International Harvester Company. Other instructors in the course will be Dr. E. George Payne, professor of educational sociology at New York University, formerly chairman of the educational section of the National Safety Council and author of numerous books on health and safety for children; W. Graham Cole, director of safety, Metropolitan Life Insurance Company, formerly manager of the Washington Safety Council and safety engineer of the Bethlehem Steel Company; and Louis Resnick of the New York Edison Company, formerly editor of the National Safety News and director of publicity for the National Safety Council.

The course is open to all graduates and undergraduate students in New York University and the employees in the industries which are members of the Museum of Safety and also to insurance safety inspectors, government officials and employees, industrial safety committee men, and others who through previous training or present association are professionally interested in accident prevention.

Coming Power Show Shows Marvelous Expansion

Four floors of the Grand Central Palace (New York) will be filled with interesting and important exhibits for engineers and manufacturers during the coming National Exposition of Power and Mechanical Engineering during the week beginning December 6, 1926. This exposition which is in its fifth year now embraces all types of mechanical equipment in use in all industries. There will be the usual splendid showing of devices for the economical generation of power and heat for which the exposition has been famed since its opening as an annual event. But in addition there will be many sections of as great importance. These will include heating and ventilating apparatus, refrigerating machinery, mechanical power transmission equipment, devices for handling material economically and machine tools of all types. Over 450 manufacturing firms will be represented by instructive showings of all the important machines and apparatus in use throughout industry. It will be a complete mechanical show and judging from past records will draw close to 100,000 visitors from all over the country.

The exposition is under the management of the International Exposition Company, Charles F. Roth and Fred W. Payne, managers, with offices in Grand Central Palace, New York.

Forestry by Radio

On April 22, 1922, the first broadcasting of a talk on forestry was done by the New York State College of Forestry, Syracuse University, through the Schenectady station WGY. At that time popularized radio had just started and there were few receiving sets in operation.

Today 20 million people are "listening in," which probably indicates an unparalleled development in the acceptance by the public of a mechanical device. With 500 broadcasting stations throughout the United States sending to such a vast public, forestry via radio has taken an important place in public education.

The United States Department of Agriculture has arranged to send out information on the subject of forestry through 100 broadcasting stations. The organized lumber industry through the National Lumber Dealers' Association is co-operating with the National Farm Radio Council and are broadcasting regular forestry talks relayed from New York, Schenectady, and Oakland, California, through thirteen stations. The radio thus brings advice on forest land problems to hundreds of thousands of land owners. It shows them the necessity for practicing scientific forestry and carries to millions of others whose attention might not otherwise be attracted, the importance of this economic problem. In this way the radio is rendering a great economic service, and at the same time a patriotic service, in helping to conserve one of the nation's essential natural resources.

The American Writing Paper Company, Sidney L. Willson, receiver, has given Gibbs-Brower Company, paper and pulp mill brokers, 261 Broadway, New York, and 166 West Jackson Street, Chicago, the exclusive right of offering for sale the seven mills of the American Writing Paper Company which are to be disposed of under the new reorganization plan. The Gibbs-Brower Company are well and favorably known as dealers in pulp and paper plants and the different machinery used therein.

Freeness Testing

Notes on the Use of Standard Apparatus in Testing Freeness of Paper Stock

IN making paper mill tests, the chief objective is to evaluate in precise terms exactly the variations and fluctuations of factors that influence the product. Absolute measurements are almost impossible of attainment, and as control is as often good luck as good management, comparative measurements become factors of prime importance. They are easily and rapidly made at small expense, whereas absolute measurements are expensive, complicated and slow. Absolute measurements would be best of course, as with them results could be compared that were obtained in various mills in various climates and using various woods. If any one mill could pin its operation to anything approaching uniformity, it would soon occupy a commanding position among mills of its kind.

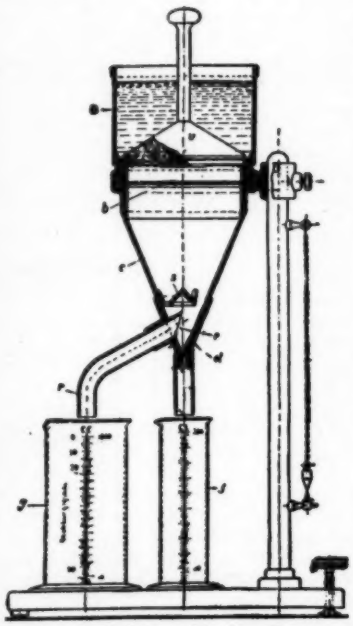


Fig. 1—Schopper-Riegler Tester

In newsprint mills and in plants where catalogue papers and similar sheets containing much groundwood stock are made, many precautions must be taken to insure uniformity of pulp, as regards fineness of grinding and degree of beating. Several different types of instruments for testing both the freeness and slowness of pulps are now on the market, the latest form being known as the Standard Freeness Tester of the Canadian Pulp and Paper Association. This instrument follows the general lines of the original Green Paper Stuff Slowness Tester, an apparatus that has itself been improved in a number of particulars since it was first introduced. The Green tester is a modification of the Schopper-Riegler Freeness Tester, an instrument which is really the daddy of them all. Then there is the New Universal Model 50-50, of F. M. Williams, embodying a number of innovations which make it easy to operate even by a grinder-room boy. The side outlet on other freeness testers is replaced in the Williams apparatus by an outlet vertically downward, the diameter of the two orifices of this instrument being the same, which explains the "fifty-fifty principle."

If the determination of freedom from slivers were the only thing necessary to insure good groundwood stock, there would be no need for freeness testers, but it is essential, as well, to determine the degree of grinding and regularity of the pulp, and it is for this, and as an index of the condition of the stone, that freeness testers are employed in groundwood mills.

Schopper-Riegler Tester

As all the standard slowness and freeness testers are based on the Schopper-Riegler Tester, a description of this instrument may be given. The apparatus is shown in Fig. 1. In ordinary practice, a given weight of pulp is used to test for freeness. Four grams of pulp and a little water may be mixed thoroughly with a stirrer to defiber the mass and the bulk made up with water to a known volume, say, 1,000 cc., which will give a suspension of definite density (.4 per cent). This pulp and water mixture is allowed to flow into the chamber (a) which is closed by the funnel-shaped device (v). Drainage is started by lifting the funnel stopper, when the water-pulp mixture passes through a fine screen (b) into the conical-shaped vessel (c), which is provided with a small and large outlet shown at (d) and (r). If the water flows freely through the screen it finds exit mostly through the large opening, but as soon as the speed of flow through the screen becomes impeded, the water comes down through the small opening only. The water flowing from each outlet is collected in the vessels (f) and (g), the amount contained in each being taken as a measure of the regree of beating to which the pulp has been subjected.

In the case of free stuff, the water flows off quickly and is collected for the most part in vessel (g); in the case of slow stuff, the water flows off more slowly and collects in (f). When a pulp of exceptional freeness is being tested, the water will leave it very quickly and fill vessel (g) completely, leaving vessel (f) almost empty. This is regarded as a limiting case of degree of beating and is designated by zero or 0. On the other hand, in the case of a very slow stuff, only vessel (f) is filled and this limiting case is designated by the figure 100. Dependent on its condition, the stock will possess a degree of beating which will lie somewhere between the limits 0 and 100. The coefficient of beating or the beating number may then be obtained by subtracting the number of cubic centimeters of water that have passed through the screen quickly from 1,000 and dividing the remainder by 10. The glass cylinder, which is used for collecting the water, can be graduated so as to read off the beating number directly.

The method of testing the quality of groundwood pulp stock is equally simple. Four grains of centrifuged slush pulp from the deckers or thickeners is diluted with water to make 1,000 cc., giving a water-pulp mixture of .4 of 1 per cent consistency. This prepared solution is poured into the tester. The cover is screwed on with the stop cock open. The stop cock is then closed, and the bottom unclamped letting it hang vertically, after which the stop cock is again opened and water allowed to pass through. As it comes from the side tube, the water is caught and measured. If 120 to 150 cc. of water runs out, the results are said to be good; if over 150 cc. comes away, it is an indication that the pulp is quite free; while 100 cc. or under shows that the pulp is quite slow.

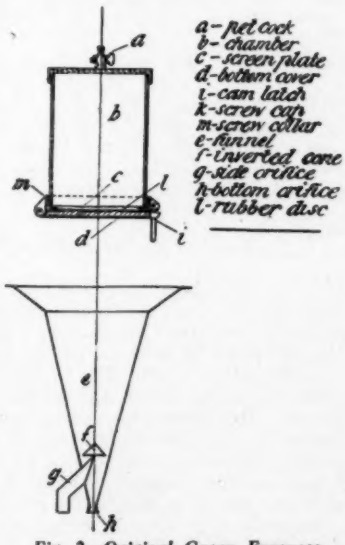


Fig. 2—Original Green Freeness Tester

Canadian Standard Tester a Modification of Green Apparatus

The original Green Freeness Tester is shown here in contrast with the Canadian Pulp and Paper Association Tester (Figs. 2 and 3). It will be seen that the principle as well as the general form of the Green apparatus are retained in the Canadian apparatus. As explained by E. P. Cameron,

of the Canadian Forest Products Laboratories, the modified Green apparatus recommended by him embodies changes that are calculated to increase the efficiency of the instrument, especially as regards accuracy of manufacture, and ease and correctness of manipulation.

Operation of Green Freeness Tester

Green's Slowness Tester appears to be preferred over other forms of testers in some of the pulp mills, and an instance

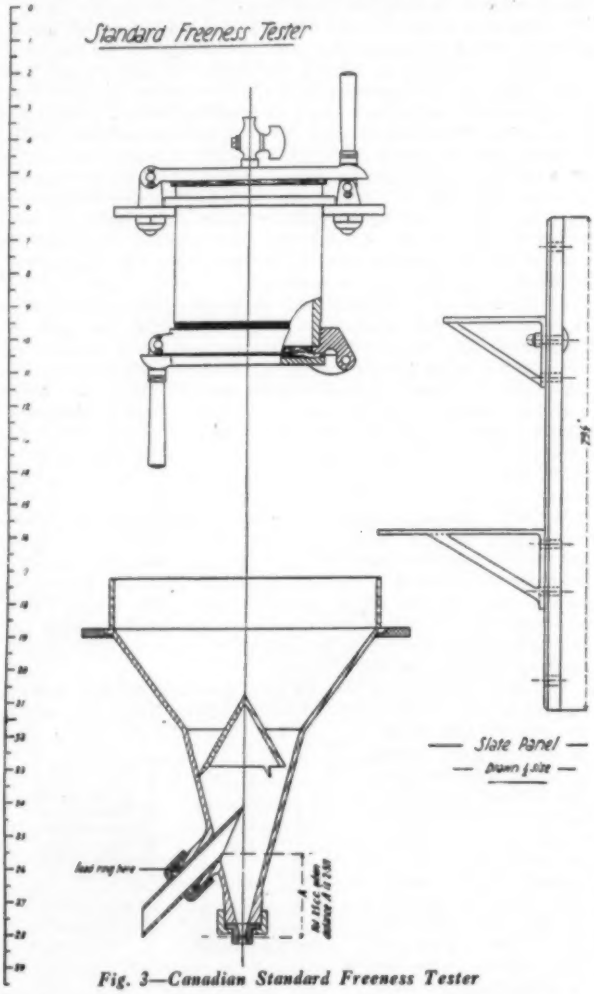


Fig. 3—Canadian Standard Freeness Tester

of its use may be appropriate here. In running kraft at the mills of the Central Paper Company, Muskegon, Mich., a simple wooden stand is built over a sewer between two beaters. On this stand is mounted the slowness tester, a hose being brought within reach. The beaters are furnished, a roughly uniform density being maintained in them by independent means. The beaterman takes frequent readings from each beater on the slowness tester, and when the stock reaches a certain slowness value, shown on the instruction card, the beater is either dropped or stopped. There are two of these slowness testers in that beater room.

To make a reading, a certain measure of stock is dipped from the beater. This is poured into a vessel with a known quantity of water. The mixture is stirred, poured into the tester, stirred again, and the test started. It requires a minute or less to complete the test. From two or three of these tests can be made every five minutes during the day on each tester, including the cleaning of the sieve in the upper chamber to make it ready for each test. This was proved so satisfactory to the mill management that they have standardized on it, thus insuring more complete control and greater uniformity of operation than had ever been the case before.

Williams New Model Tester

It remains to describe the Williams 50-50 Model Freeness Tester, the construction of which is shown in the accompanying illustration (Fig. 4). The advantages claimed for the Williams Tester are (1) vertical overflow nipple instead of side outlet, giving better cut-off; (2) universal range capable of testing any kind of stock; (3) instantaneous flow with the turn of a handle; (4) self compensating for temperature variations; (5) direct scale readings.

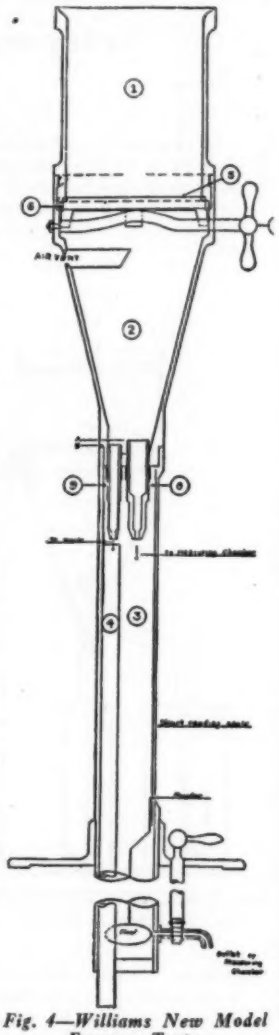


Fig. 4—Williams New Model Freeness Tester

As reasons for investing in a freeness-testing outfit, it is stated by Williams that (1) in the groundwood mill, more pulp may be ground per horsepower by dressing the stones when they need to be dressed as shown by a freeness test than by relying upon someone's guesswork; (2) it enables the paper mill to obtain pulp best suited to its requirements; (3) freeness test affords a definite end-point of beating, thus economizing in horsepower and affording stock of uniform freeness; (4) tests can be made at beater, jordan and headbox.

The operation of the Williams Tester is simple. Into the strainer bowl with foot-valve closed are poured 500 cc. of stock, .4 of 1 per cent consistency, the equivalent of 4 grams of bone-dry fiber per 1,000 cc. By a turn of the handle, shown near the top of sketch, the discharge is started through the strainer, the pointer at the same time rising quickly on the scale until it comes to a dead stop. After taking the reading, the waste cock at bottom of measuring chamber is opened and the pointer returns to zero. After washing pulp from strainer the instrument is ready for another test.

Carborundum Co. Announces Changes

The Carborundum Company, Niagara Falls, N. Y., announces several changes among the personnel of its district sales managers. Mr. Farrand Hall, formerly district sales manager of the Cleveland District, has been transferred to the sales department at the main plant, Niagara Falls.

The position of sales manager in the Cleveland District will be filled by Mr. Harry Collinson, who will be transferred from a like position at Milwaukee.

W. D. Mount, consulting and mechanical engineer, announces that on September 1st, the Swenson Evaporator Co., a subsidiary of the Whiting Corp., Harvey, Illinois, took over the manufacture and sale in the United States of his line of apparatus and equipment, formerly manufactured and sold by the Glamorgan Pipe and Foundry Co., Lynchburg, Va. The same apparatus and equipment will be sold in Canada by the Canadian Iron Foundries, Ltd., Montreal, and in England and the Continent by the International Construction Co., Ltd., 56 Kingsway, London. Mr. Mount will act as consulting engineer for the three companies and will continue his office at 602 Peoples National Bank Bldg., Lynchburg, Va.

The Thorne Pulp Bleaching Process[1]

By JULIUS FUNCKE

THE bleaching of cellulose has been subjected to close study during the last few years, in Europe, and particularly in Germany, as evidenced by the numerous articles published on the subject.

These investigations, however, deal mainly with the chemical phenomena involved in bleaching; but when we consider the amount of heat absorbed in bleaching pulp at a consistency of 5 to 8 per cent, the time required and energy consumed in many mills to obtain this consistency, and also the time required for washing, it is rather surprising to see that so little attention has been given to these problems in the trade journals.

Of course we do not know the processes adopted in all the various mills. In the case of quite a large number of recent installations, however, the stock is bleached at a consistency which is nearly always below 8 per cent. In Europe there are very few mills that have attempted high-density bleaching, sometimes by the Dobson process when a very white pulp is not required.

Such is not the case in America, where this question has been studied very closely, and many of the new bleaching plants work at consistencies of 14 to 20 per cent. In most cases no addition of heat is necessary and the economies in power, time and labor cost are very considerable.

These processes, though they give a stronger and cleaner pulp, have not been adopted in Europe to any appreciable extent. It was probably considered, and perhaps not without some reason, that with such high consistencies the bleach liquor would not be uniformly distributed through the pulp and would attack the fiber; and also that the violent mechanical agitation which is required would unduly hydrate the fibers, especially owing to the presence of incompletely dissolved incrusting matter. Finally, it was feared that the pulp might ultimately turn yellow again. So that the European pulp mills steered clear of these processes, in spite of their undoubted advantages.

The Thorne bleaching process, however, though it has been known but a short time, has aroused considerable interest, even in Europe. A few European mills have decided to install it, while it is already in operation in one of the large Canadian mills and is being installed in several others.

Description of the Process

C. B. Thorne has devised a two-stage process which is particularly well suited for the conditions which exist in large modern mills. The stock can be kept at a high density either in both stages or only in the first stage of the bleaching, and the latter arrangement allows of using the process in existing mills. The use of a high density for both stages is especially suitable for the bleaching of hard pulps.

The screened pulp is thickened to a consistency of 7 to 8 per cent in the usual way and falls into the hopper of a screw press, which it leaves at a consistency of about 35 per cent. The screw press affords a simple means of attaining the desired consistency without having to lap the pulp, and it possesses the further advantage of allowing the consistency to be easily regulated. It should also be noted that if the pulp still retains traces of liquor after being deckered, most of this liquor is removed by the screw press. This is perhaps of even greater importance in the case of wood or straw which has been cooked with alkali than in the case of sulphite pulp. Such a press has a capacity of about 50 tons per 24 hours and can raise the consistency from 7 to 9 per cent up to about 35 per cent.

The thickened pulp is discharged from the press directly into a kneader or "opener," constructed on the same principles as the "openers" used in most of the European chemical pulp mills. This machine, which is built entirely of iron, consists of two shafts with a number of arms, rotating at high speed in opposite directions. The pulp is torn apart and at the same time mixed with the bleach liquor and with hot water. As it remains but a few seconds in the machine there is no danger of the pulp being treated too roughly. Above the kneader are measuring tanks from which the bleach and hot water flow continuously into the apparatus, the rate of flow being regulated very accurately by means of an overflow and a float-valve in each tank.

The temperature of the water and the amount added are regulated so that the pulp reaches the bleaching tower at the proper density and temperature, say 20 per cent and 20° C. The water is heated only in winter.

The size of the bleaching tower naturally depends on its capacity. A tower 6.75 meters high and 2.75 meters internal diameter can treat 90 tons per 24 hours. A number of openings are provided in the tower for taking samples, so that the progress of the bleaching operation may be followed.

In the center of the tower is a hollow vertical shaft, which is rotated at a speed of one-third of a revolution per minute, and which has three arms. The first, or top arm, effects an even distribution of the pulp as it enters the tower from the kneader. The middle arm is hollow and is provided with numerous small perforations through which air at a pressure of about 15 pounds per square inch is blown into the pulp. The air facilitates bleaching, as shown by the investigations of Schwalbe and of Wenzl. The bottom arm acts as a scraper and ensures the regular and continuous discharge of the pulp through the central discharge opening.

On leaving the bleaching tower the pulp is immediately diluted with water to a consistency of 1 per cent. It is thus washed, and this operation completes the first stage of the bleaching.

The pulp is then deckered and sent to a Bellmer bleacher to finish the bleaching, or else it is put through a second screw press and a second bleaching tower exactly similar to the one which has just been described.

Advantages of the Process

This process has numerous advantages.

It is continuous, and at the same time it is extremely flexible so that it can be adjusted to meet varying conditions of manufacture. By regulating the consistency of the pulp, the amount of bleach, the temperature of the water, the air injected through the central arm, the speed of the central shaft, and the position of the bottom arm, the bleaching conditions can easily be adjusted to obtain the desired output and the proper grade of pulp.

Finally, the Thorne process is based on the most recent work on the bleaching of cellulose. The advantages of injecting air and of bleaching at low temperature have already been mentioned. The higher rate of bleaching by this process should also be noted.

Combined acid-alkaline bleaching can also be carried out very simply by the Thorne process.

Its economic advantages are also interesting. The cost of installation is lower than that of an ordinary bleach plant, particularly on account of the small amount of floor space required. As the moving parts turn at low speeds the amount of power required and the cost of upkeep are smaller than in the older processes.

Moreover, owing to the high consistency of the pulp the Thorne process results in a reduction of 30 to 40 per cent in the consumption of chlorine, 50 per cent of the steam and 30 per cent in time. These figures are based on the results of tests carried out in the course of regular mill-scale operation with high consistency for the first stage and low consistency for the second stage of bleaching. For instance, stock which required 7 hours to bleach at a consistency of 6 per cent was bleached in 5 hours by the new process (2 hours in the tower and 3 hours in the Bellmer bleacher at 6 per cent consistency). The heat consumption during the first stage was negligible (70 calories per kilo) in spite of the fact that both the pulp and the bleach were at a very low initial temperature (2°C.). And moreover, the second stage could be carried out at a much lower temperature than the usual bleaching in Bellmers.

It is a well known fact that the bleach consumption decreases with increased density of the stock. In the Thorne process the consumption is still further decreased by the intermediate washing of the pulp.

Higher-Grade Pulp

Comparative tests carried out on pulps bleached by different processes have shown that pulp bleached by the Thorne process has a higher tensile strength (Mullen and Schoppe),

[1] Translated from Le Papier xxix, 533-537, May, 1926, by A. Papineau-Couture.

folding resistance (Schopper) and tearing resistance (Elmendorf), and that it has a higher cellulose content.

The pulp does not turn yellow, even after prolonged storage, which is an appreciable advantage over other high-density bleaching processes with which it has not yet been found possible to obtain a perfectly permanent white.

These results are all the more interesting when we consider the care with which the larger American and Canadian mills control the strength and quality of their bleached pulps.

The effects of bleaching on the physical properties of the fibers are carefully controlled in the mill laboratory; for it has been known for a long time that the modifications brought about in these properties during bleaching constitute an excellent criterion of the manner in which the digestion and cooking have been carried out. The fibers should be stronger after bleaching than before.

The Thorne process was worked out as a result of systematic tests carried out in a well-equipped laboratory such as are found in modern mills on this Continent.

When its merits had been proved by preliminary trials, a 30-ton unit was installed, and the capacity of the plant was subsequently increased to 250 tons per 24 hours.

The effects of the Thorne process on the chemical properties of cellulose have been carefully investigated, and the best proof is that the Kipawa mill of the Riordon Pulp Corporation, at Temiscamingue, Quebec, uses it to the exclusion of all others. This mill, which was designed by the inventor of the process, is one of the finest sulphite mills in the world and its product enjoys a well-deserved reputation the world over. It makes the highest grade of sulphite for the manufacture of viscose, and it ships a large amount of its pulp to the European viscose plants.

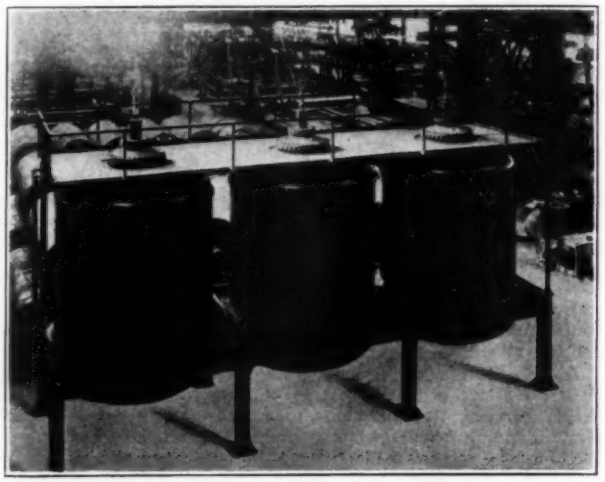
A visit to this mill soon dispels the widespread impression that in America quality is considered as secondary to quantity of output. Both the process itself and the interest with which it was received are testimony to the ever-increasing attention which is being given in Canada and the United States to quality and to economy in production.

Electric Power for Steam Raising

The photograph illustrates the largest electric steam boiler ever built, now installed in the plant of Price Brothers & Co., Ltd., of Kenogami, Que. It is the Kaelin type, the sole rights for which in U. S. A. and South America, are again in the hands of Mr. Frank Hodson, consulting engineer, Jefferson Building, Philadelphia, Pa. Mr. Hodson, who originally introduced these boilers into U. S. A. advises us that this particular boiler is designed to operate directly on 13,200 volts current and has a capacity of 32,000 kw. and is capable of producing 100,000 lbs. of steam per hour at the required pressure. The tanks are 9' 8" dia. x 10' 6" long on parallel and it will be seen that the whole unit, equal to 3,200 boiler horsepower, occupies a minimum amount of room as compared with fuel fired boiler equipment of the same capacity. There is also no comparison in the initial cost of the two types of installations. The thermal efficiency of this boiler is expected to be between 96 and 98 per cent—the boiler shell can be thoroughly insulated—the water itself acts as the register so all the electric current put into the tanks is usefully employed in generating steam. The only B. t. u. losses are those occasioned by occasional bleeding the boiler to free the tanks from sediment that might accumulate.

The progress made in electric boiler design and construction in the last few years has been remarkable and 95 per cent of the installations on this continent have been of the Kaelin type—originally developed by Mr. P. T. Kaelin, chief engineer of the Shawinigan Water & Power Co. Upwards of 500,000 kw. of this type of boiler have been installed in the last four years—a phenomenal growth of a new industry. Amongst other notable installations might be mentioned those of the Niagara Falls Power Co., Brown Brothers, Berlin, N. H., International Paper Co., Ford Motor Co., Newfoundland Pulp & Paper Co. (100,000 kw. electric boilers installed), Abitibi Power & Paper Co. (20,000 kw.), Washington Pulp & Paper Co., Washburn Crosby Co., Heart's Delight Farm. A number are in successful operation in South America—in one case a Kaelin electric steam boiler sold to Grace & Company is operating in the interior of Peru in Cuzco, the ancient centre of civilization of the Incas. It is used for producing all the steam required in a wool producing plant. Formerly, fuel had to be carried many hundreds of miles.

The electric steam boiler has a wide variety of uses, wherever electric power is cheap enough and a use for steam exists. There are, in a great many districts where steam is used in different processes, times when there is more water



"Kaelin" type Electric Steam Boiler, 32,000 kw. capacity or 50 tons of water to steam per hour. Designed to operate on 13,200 volt power. Installed at Price Bros. & Co., Ltd., Kenogami, Canada.

available for generating power than the demand for power. Such excess of water can be used to generate power and the power converted by a Kaelin electric boiler into steam. Some of the boilers in use produce all the steam all the year around for the plants. Others are tied into existing fuel fired boiler systems and only come into operation when there is excess of water or power available, when they automatically cut down the fuel fired boilers—others operate at week ends only when part of the mill is shut down and spare power available from this source. As the actual amount of water in the tanks at any one time is very small, it requires only a very few minutes to get the boilers up to steam producing load and this fact is taken into account in tying in electric boilers as a means of ensuring a steady working demand for power. The valleys in the power demand are automatically switched on to the electric boiler, steam is produced in such intervals, and when the ordinary mill demand increases above a pre-set figure, the electric boilers are cut out.

In cases where works or plants which buy blocks of electric power have a use for steam for heating or process work of any kind, and do not have a steady demand for the power they buy, the electric boiler will ensure full economical use of the power they are paying for.

The electric boiler requires little or no attention—one man can attend to a 100,000 kw. set and he has little to do beyond watch the gauges from time to time—the amount of power used and the amount of steam produced are both governed by the height of water in the tanks, and this can be seen by simple adjustment of the incoming feed water. There is no heat or noise and there is little to show whether an electric boiler is in operation or not, except the figures on the control instruments.

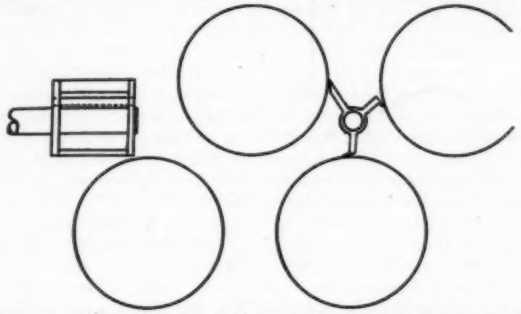
There are undoubtedly very many places where such boilers can be installed with advantage and effect immense economies on fuel, labor, space, initial cost and operating cost.

The W. A. Jones Foundry & Machine Company, Chicago, Ill., announces the appointment of Ralph L. Shaw as Milwaukee District representative, to fill the vacancy created by the resignation of Mr. Fred E. Holtz. Mr. Shaw will assume his new duties at once, making headquarters at 425 East Water St., Milwaukee, Wis.

Practical Helps for the Mill Man

Scrape the Dryers

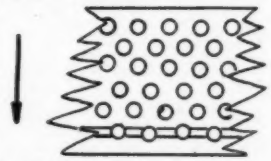
WASTE elimination does not all lie in the recovery of fibre from white water. The little matters of good housekeeping which are so often neglected are frequently responsible for considerable losses. One of these points is the



scraping of the dryers. A few dryers should be scraped at every opportunity. A note can be made of the last dryer scraped so that a complete turn of the dryer nest will be made before one dryer is scraped twice. The sketch shows a light frame carrying scrapers which touch three dryers at the same time. Scraping the dryers will result in reduced steam consumption.

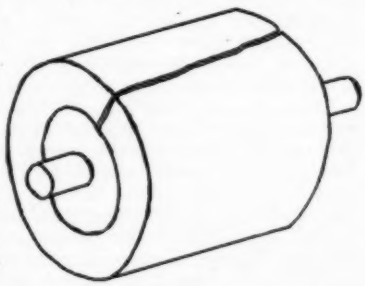
Taking Streaks Out of the Paper

ON some grades of paper, streaks follow down from the last such box perforations to the couch roll and make permanent marks in the sheet. This has been eliminated in one mill by a groove joining the perforations in the last row of the last suction box. Instead of water following in streaks from each hole it is distributed evenly across the sheet by the groove.



A Cracked Grindstone

A SUPERINTENDENT, who was one of the first users of the big size grindstones for magazine grinders, said that he was surprised to find that some of the users of the big stones considered that a crack across the stone spoiled the stone for pulp making. This man said that he believed that a stone with a small crack was practically insured against any further breakage, as the crack indicated that the internal strains in the stone, set up by the speed of rotation or possible excess tightening of the stone flanges, were relieved. This man called attention to the fact that the arrangement of the flanges for magazine grinders made it practically impossible for the stone to fly out of the flanges. It will fall into pieces, or chunks from the center might fly out, but in general there is no danger from the small crack, even if it extends all the way across the stone.

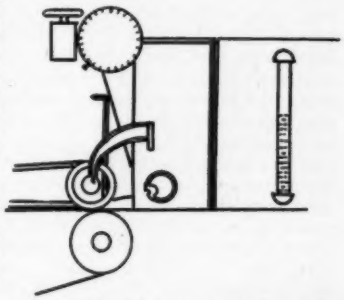


Cylinder Mould Coverings

A PAPER mill superintendent discovered after some experiment that using wire cloth of the same material for both the coarse mesh and the fine mesh cylinder coverings extended the life of the wire cloth considerably. This man had been using 14 mesh bronze wire and then 50 mesh brass wire on top of it. This combination gave three or four months' service. He changed to brass wire cloth for both coverings and extended his covering life to about nine months. His theory is that both coverings should be brass or both bronze, not one covering of each material.

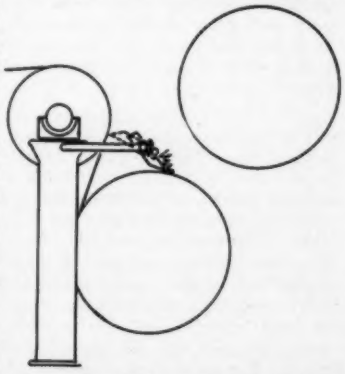
Stock Outlet Adjustment

MILLS which have the new type of slice, frequently referred to as a stock inlet or a similar name, fail to get the full advantage of their equipment if they do not take advantage of the opportunity to record the best opening and head in relation to the class of paper being made and the speed of the machine and weight of paper being run. Certain of the stock inlets being made are equipped with a dial and indicator showing the exact opening of the outlet. Where this is lacking a little ingenuity would provide one. In addition, there should be a gauge for indicating the head behind the slice. A gauge glass on the outside is preferable to a set of marks inside. As each weight of paper is made, the machine speed, outlet opening and head (height of stock in the head box) should be recorded. This will give a standard for the running of a similar order. It will also provide a basis for experiment as to whether a slight change of head or outlet opening might improve the formation or permit increased machine speed without lowering the quality. The only variable unprovided for in such a system of records would be the relative freeness of the stock, and a test in the beater room just before the stock goes to the machine would give this. There are, of course, a number of freeness testers which would give this factor at frequent intervals. Paper makers who have taken the trouble to study the relation of outlet opening and head, by means of the indicator on the stock, outlet and a head box gauge, report increased speed with maintainence of quality.



Doctor to Help the Backtender

THE backtender will get a better start over the dryers if he is provided with a short wooden doctor on the first big dryer. He can then let the paper run for a few seconds while he is getting down from the third press foot board. Frequently, the distance from the third press foot board to the ground or some peculiarity of the arrangement between the third press and the dryers puts the backtender a little behind the paper when he hits the ground. This wooden doctor to catch the paper gives him an even start over the rest of the dryers and reduces the possibility of dropping the paper. The wooden doctor is only about two feet long and is arranged to turn up out of the way when the paper is over the machine. This keeps it from collecting dust.



A E S C 1926 Year Book

The American Engineering Standards Committee has recently published its 1926 Year Book. In it reports of the various projects undertaken by the committee during the year 1926 are given. Of particular interest to the paper manufacturing field is a safety code for pulp and paper mills tentatively approved by the A E S C. The work on this code was started in 1920. Great interest in the work has been taken by the companies operating mills in both the United States and Canada. The code comprises eight parts dealing respectively with: yards; preparing pulpwood; preparing rag and old paper; acid making; chemical processes of making pulp; preparing pulp for paper machines, machine rooms and finishing rooms. It also contains an appendix on overhead structures and equipment, bulletin boards, loose clothing, belts, and use and care of tools. The National Safety Council acted as sponsor of the code, and Mr. R. M. Altman of the Marathon Paper Mills Co., Rothschild, Wis., was chairman of the sectional committee entrusted with the work of formulating the code.

The American Engineering Standards Committee had its beginning on January 17, 1917, at a meeting of a special committee appointed jointly by the American Society of Civil Engineers, the American Institute of Mining Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers, and the American Society for Testing materials. This meeting was held for the purpose of formulating some means of co-operation to prevent duplication in standardization work and the promulgation of conflicting standard. As a result of this and subsequent meetings, the American Engineering Standards Committee was organized, made up of representatives from the five societies mentioned. Since that time, the U. S. Government Departments of War, Navy, and Commerce have designated representatives to serve on the committee. The organization has grown considerably in the short time since its inception and each year contributes many valuable aids to the engineering field at large.

Copies of both the 1926 Year Book and the bulletin covering the above mentioned safety code may be obtained from the office of the American Engineering Standards Committee, 29 West 39th St., New York City.

1925 Commerce Year Book

The 1925 edition of this book is now ready for distribution. As paper production is reported only biennially, the latest complete report given is for 1923. There is given, however, a brief summary and comparison of the years 1924 and 1925.

In 1924 estimated production of paper (not complete) was about 7,345,000 short tons, increasing in 1925 to about 7,807,000 short tons, all classes. The output of newsprint in 1925 was 1,526,000 tons as against 1,471,000 tons in 1924. Average prices showed no marked changes from the previous year; newsprint was steady at about 4 per cent below the level of the last half of 1924. The total value of imports of paper base stocks, paper, pulpwood and printed matter in 1924 was $252,000,000, the greatest ever reported. Imports of newsprint were slightly more than 2 per cent than in 1924, while imports of pulp and other stocks increased about 10 per cent. Exports of paper and paper products in 1925 increased 2 per cent in value, while exports of books and other printed matter increased over 5 per cent.

According to the report given of 1923, there were nearly 121,000 wage earners employed during that year. The products of the pulp and paper industry (involving some duplication) were valued at $907,000,000. There were 1,828 paper-making machines in the United States in 1923 with a capacity of 9,725,000 tons annually, as compared with 8,614,000 tons in 1921. The actual production of paper during 1923 having been reported by the census at 8,029,000 tons, it appears that the great bulk of the capacity was active at that time.

The paper consumed in and exported from the United States in 1923 is estimated by the United States Forest Service to have required the consumption of 10,204,000 cords of pulpwood. The amount of domestic pulpwood consumed in our own paper manufacture was 4,637,000 cords, while pulpwood, wood pulp and paper imported, chiefly from Canada, represented the equivalent of 5,567,000 cords. The production of our paper supply derived from domestic pulpwood is, on the whole, decidedly declining.

The book, from which the above summary was taken, may be secured from The Superintendents of Documents, Government Printing Office, Washington.

The Fascinating Story of Printing Inks

Among recent publications from the press of Harper & Brothers, New York, is *Printing Ink, A History, With a Treatise on Modern Methods of Manufacture and Use*, by Frank B. Wiborg. The first two chapters constitute a fascinating account of the history of ink in China from its earliest origins, with references here and there to paper and the substances like silk refuse that in ancient times served as raw material for paper. "The refuse from silkworm cocoons was soaked and beaten in water in order to eliminate coarse particles. This mass was reduced to a paste, and thus purified was spread over a fine bamboo mat mounted on a wooden frame. This served as a mould on which the paste precipitated, and when dry, produced a sheet of paper. Such bamboo mats are still utilized in the modern manufacture of paper from bamboo or tree-bast fibers."

The invention of bark and rag paper by Ts'ai Lun in A.D. 105 is noted. It was he who conceived the idea of using hemp, old rags, and similar waste material for making paper. Mr. Wiborg declares that Ts'ai Lun "must be honored as the man to whom we are indebted for one of the most far-reaching discoveries ever made in the annals of technology. Without paper there would have been no adequate record of the past, no progress, no science; it marks the dawn of civilization, it sets off civilization from savagery."

Voluminous details are given in the early chapters of Wiborg's book of early native methods of ink manufacture as practiced by the Chinese, Japanese and Tibetans. Even the Lolos, an aboriginal tribe in the western part of China, were known to be makers of inks. Wiborg mentions two kinds of Lolo inks; one made from a soft schist of blood color and the other from the ashes of a large mushroom that grows on the trunk of an oak.

Nearly half the volume is devoted to a curiously intimate historical account of the development and uses of ink in the countries of its origin, including—besides China and Japan—India, Egypt, Palestine, Greece and Italy. In chapter vii, which covers the history of printing ink in Europe to modern times, an account is given of the cuneiform inscriptions to be found on the clay tablets of the Assyrians and Babylonians dating back more than 4,000 years. With the introduction of papyrus as a writing material came the invention of ink and the development of a beautiful art which grew with the use of parchment. Details are given of the manufacture of papyrus rolls and of parchment skins, as well as of vellum parchments which were used for the elaborate miniature painting done by famous illuminators. This choicer variety of parchment was made from the skins of calves' intestines.

The author does not stop at a mere account of the history and the properties of printing inks. His book is an extraordinary collection of information on printing processes as well. The story of how Senefelder hit on the principle of lithography or printing from stone is well told, and so is that later development of lithographic work—offset printing.

The beginnings of photoengraving and its marvelous development form an interesting chapter in this book on *Printing Ink*. The work of Niepce and Daguerre, pioneers in photography, is mentioned as an introduction to details of the invention of photoengraving, halftone plates and process color work. Then follow accounts of rotogravure or rotary intaglio printing, details of processes being given. The closing chapter is devoted to descriptions of inks used in the printing industry, and appendixes give the etymological derivations of the English word "ink," as well as the names by which it is known in some twenty-five other languages. There is also an excellent bibliography and a tribute to the author and his partner in business, Levi Addison Ault.

There is a good deal of repetition in some of the chapters and in future editions the author will perhaps make an effort to connect related subjects more directly than they are in the present edition.

News Briefs from Washington

Consular Reports

Conditions in Germany—Recent unsettled domestic conditions throughout Germany have lately made themselves felt through an increase in paper and board exports. The German domestic market is always given primary consideration in normal times and any decrease in domestic absorptive power is immediately reflected in greater exports. During the first half of 1926, exports were nearly 30 per cent greater than during the corresponding period of 1925.

Consul H. C. Claiborne at Frankfort a./M. reports slight reductions in prices of certain grades of paper effective through the second quarter of 1926, but states that the unfavorable sales and turnover situation remains unchanged at the close of that period. Business in the fine paper industry was affected adversely by money scarcity and increased foreign competition, notably Austrian and Belgian, making foreign orders hard to obtain. Employment in paper and pulp mills in Germany has been spotty, some mills having closed completely, while others have taken on increased hands. Orders from the United States have been reported as falling off, owing to high import duties imposed and to prices, which have become so high as to prevent entering the American market.

Finland Mills Affected by British Conditions—Consul J. F. McGurk at Helsingfors, Finland, informs us that Finnish pulp and paper exports have been noticeably affected by the adverse business conditions prevailing in Great Britain over the past two months, and fell considerably under those for the corresponding period of 9125. Sales of wrappings and kraft paper have not been affected so severely there, however, as in Germany, where many of the mills in the southwest of the Republic have been forced to turn to the manufacture of cheaper grades. British wrapping paper mills are reported as already feeling a decided increase in orders, owing to the effect of the increased duty. The actual result of the imposition of this duty will be difficult to judge until the resumption of full duty by the mills closed at an earlier date through the coal shortage.

Assistant Trade Commissioner Kekich at Helsingfors, Finland, reports a recent announcement to the effect that Raahe O/Y., Branestad, contemplates the erection of a new pulp mill of 10,000 metric tons yearly capacity in the north of Finland. Also, Keski-Suomen Metsa O/Y. of Sasmalanti is reported to have decided definitely on the erection of a power plant and pulp mill in conjunction with the present sawmill of the company in order to utilize mill waste. It will have a capacity of from 5,000 to 6,000 tons annually.

"Economic Life" of August 10, 1926, reports that the Finnish paper mills have contracted to supply Soviet Russia with its supply of newsprint for 1927 on a basis of three months' credit.

Austrian Production Near Capacity—Commercial Attache H. L. Groves at Vienna states that the Austrian industry is operating at nearly capacity in practically all lines, production for the first six months of this year having been 85,880 metric tons of paper, 90,280 tons of chemical cellulose, with the output for June alone placed at 15,200 tons. Production in both paper and pulp is well ahead of the same period of 1925.

Greece to Have New Mill—Acting Commercial Attache Dickerson at Athens, Greece, states that a new mill for the manufacture of paper and board is being constructed at Aeghion, near Patras, and will be the largest and most up-to-date plant in the country. This new mill represents an actual capital investment of about $625,000, a large part of which is stated to have been contributed in the form of machinery and equipment by a group of Swedish capitalists. The total capacity of the mill will be 20 tons per day, equally divided between board and paper.

Old English Wrapping Paper Mill to Reopen—Vice-Consul Levis at Newcastle-on-Tyne reports that the West Hartlepool Paper Mills, which have been closed for a number of years, will soon reopen. These mills have been acquired by the Durham Paper Mills, Ltd., and will run high-grade wrapping papers of various kinds. An output of about 175 tons weekly is scheduled.

Belgium Reports Good Conditions—There has been a continued operation at maximum capacity in the Belgian paper and board mills, according to Consul G. S. Messersmith at Antwerp. Quotations on all grades advanced with the fall in exchange rates, but not sufficiently to offset the drop in value of the franc. Further increases are expected. Export demand continues good, but a reduction in imports is expected when the new tariff rates on paper and paper products is felt.

Polish Paper Industry Makes Steady Progress—Consul W. A. Leonard at Warsaw, Poland, reports steady progress in the Polish paper and pulp industries, production of the former in 1925 having reached 76,000 metric tons, which exceeded the 1924 output by 56 per cent. As compared with 1919, this represents a 400 per cent increase for the last calendar year. Annual mill capacity of the Polish paper mills is stated to be slightly in excess of 100,000 tons. Cellulose production in the two mills now operating also shows a steady increase. The output in 1925 was 34,673 tons, as against 29,793 tons in 1924.

Bulgarian Timber to be Exploited—A recent report from Sofia, Bulgaria, according to Commercial Attache Groves at Vienna, indicates that a group of Austro-German capitalists have obtained a concession for timber operations in Bulgaria covering an area of about 150,000 acres, principally first-growth pine and spruce. The concession runs for forty years and certain rail lines and other improvements are to be made according to the contract. The report states that the new company, under the name of the Bulgarian Timber Industry, Ltd., will construct two large sawmills and a paper mill, a sister concern in Vienna to act as distributing agent.

Testing Two Sides of Paper for Bursting Strength

As a part of its co-operative work with the Technical Association of the Pulp and Paper Industries in formulating its official paper-testing methods, the Bureau of Standards has investigated the effect on the bursting strength results of testting on the two sides of the paper. Four samples of a tag board were submitted by a manufacturer for that purpose. An equal number of tests were made, 20 in number, on each side of the samples. The following table shows the results obtained:

Bursting strength No	Weight, 25 by 40, 500 Pounds	Thickness Inch	Bursting side A Points	Strength side B Points	Mean bursting strength Points	Difference of either side from mean Per cent	Difference between sides Points
5894.....	323	0.02 4	235.2	271.0	253.1	7.1	35.8
5895.....	314	.0210	236.7	281.5	259.1	8.6	44.8
5896.....	228	.0159	188.3	215.8	202.1	6.8	27.5
5898.....	203	.0125	180.4	206.2	193.3	6.7	25.8

This table shows that considerable variation in test results may be obtained, depending on the side of the paper to which the bursting pressure is applied. While such results are more common in the heavier papers such as tag stock, it is occasionally met with in certain light papers. A kraft wrapping paper glazed on one side showed considerable difference when tested on the two different sides.

As a result of the information obtained, the association has considered it necessary to insert a provision in its official method that an equal number of tests be made on each side of the paper in all cases and the average of them reported as the bursting strength of the paper.

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Barreled Sunlight is sold in 55- and 30-gallon churn-equipped steel drums, and in cans from ½ pint to 5 gallons. Where more than one coat is required, use Barreled Sunlight Undercoat first.

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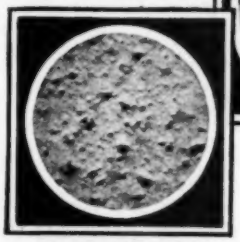

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Catalogs, Booklets, Etc.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.—The Thorne Barking System forms the subject of a new booklet recently issued. Although the Thorne Barker has been on the market for several years, this booklet presents the subject in a new and interesting manner. The principal features of the Thorne Barker are that it eliminates manual handling of the logs from the time they are placed on the haul-up until they are delivered to the chippers; it abolishes slashing, barks the logs perfectly clean without brooming the ends, and permits stacking the logs mechanically in such a manner that the maximum drying effect is obtained. The booklet is complete with a number of illustrations and diagrams. Two suggestive layouts are given for installing the Thorne System.

The Borden Company, Warren, Ohio.—A new series of Beaver Adjustable Die Stocks are covered in a recently issued folder. The novel feature of these stocks is that the die adjusting cam is underneath the dies. The folder contains a few illustrations and charts.

Buffalo Forge Co., Buffalo, N. Y.—Two new booklets have been recently received, one of which describes baby conoidal fans, and the other Buffalo electric blowers. Both booklets are freely illustrated and contain numerous size charts and tables.

Combustion Engineering Corporation, New York City.—A new booklet pertaining to the Coxe Traveling Grate Stoker has been received. The construction, design and theory of operation are all gone into thoroughly and in a manner that leaves nothing to the imagination. The booklet is unusually well illustrated with views of installations, pictures of the apparatus and diagrams.

General Electric Co., Schenectady, N. Y.—In the usual monthly issue of individual bulletins, the following subjects are covered: automatic arc welding appartus, direct-current crane and hoist motors, direct-current generators and exciters, wound rotor induction motors, constant-speed, direct-current vertical motors and inductive motor-generator sets.

Hall-Will, Inc., Erie, Pa.—A portable pipe threader for factory and mill use forms the subject of a booklet just off the press. A number of new construction features quite different from anything offered before in a pipe threader are presented. The subject is covered remarkably well and the use of two colors helps to bring out the numerous illustrations.

Irving Iron Works Co., Long Island City, N. Y.—A new pamphlet describes the "Visa bledg" safety iron step. This new step has a distinctly new advantage in that the front edge of each step is clearly defined against the back of the step below. This is done by means of double crimping the first "reticuline bar." Iron floor grating is also covered in the pamphlet.

Jenkins Bros., New York City.—In a recent pamphlet the Jenkin automatic equalizing stop and check valves are described. The working principles of this type of valve, its many uses and the economies it offers are completely gone into. A number of illustrations and diagrams help in the presentation.

Determination of Alpha Cellulose

A method of determining alpha cellulose which may lead to a new definition of the substance, is presented by H. Bubeck in the convention number of *The Papier-Fabrikant*, June 5, 1926, p. 66. In a concise summary of the paper in British Chemical Abstracts, it is shown that when cellulose, meaning a good grade of bleached sulphite pulp, is mercerized with 17.5 per cent sodium hydroxide solution, filtered off, and washed, the sum of the hemicellulose in the filtrate, as determined with chromic acid, and of the undissolved alpha cellulose is less than 100 per cent. The explanation of this is that material not dissolved by the mercerizing alkali is dissolved by the more dilute alkali formed during the washing process. A higher extract of hemicellulose is therefore obtained if the mercerizing alkali is diluted before filtering, and the maximum value is obtained when the diluted solution contains 9 grams of sodium hydroxide per 100 cc.

The amount extracted depends, to a small extent, on the duration of mercerization, increasing by about 0.2 per cent between half an hour to an hour and a half. It is more dependent on the temperature, and diminishes by about 2 per cent when the temperature is raised from 12° to 27°.

To determine alpha cellulose, 3 grams of the material are mercerized at 18° with 20 cc. of 17.5 weight-per cent sodium hydroxide; after half an hour 80 cc. of 5 to 6 volume-per cent sodium hydroxide are added, and the residue after filtration is washed with 50 cc. of 8 to 9 volume-per cent sodium hydroxide, and then with water, acetic acid, and water. It is then dried and weighed. Hemicellulose may be determined in an aliquot portion of the filtrate by oxidation with chromic acid.

Forest Fire Conditions Worst in Years

Dispatches just received by The American Forestry Association from its forester, Shirley W. Allen, emphasizes the extremely hazardous fire conditions in the far West.

"Not since 1910," says Mr. Allen, "has the Pacific coast been faced with more dangerous fire conditions than the present season has brought, and it is generally agreed that without splendid advances in fire protection methods, losses would exceed those of the worst years in the past.

"A toll of two lives, one entire community and an astounding amount of equipment are grim evidence of what carelessness and lightning can do against the efforts of fire fighters.

"Two things stand out, however, from which some encouragement may be drawn. The first is a comparatively small loss of merchantable timber for the total area burned and second the large proportion of lightning fires as against those caused by human carelessness.

"The greatest loss to merchantable timber has occurred on the National Forests while losses of equipment have mounted on private lands.

"Almost 3,000,000 acres of National Forest land on the Pacific Coast is closed to use this season and this area may be increased if low humidity conditions continue."

Commenting on the situation, Ovid M. Butler, Secretary of The American Forestry Association, said, "Although rain throughout the northern Rockies has for a time reduced the critical hazard somewhat, with part of September and all of October ahead of us it is still too early to predict the full extent of our national losses. To date the expenses for fire suppression on the National Forests alone are nearly three times as great as for the corresponding period of 1925. Telegraphic advices indicate that worse atmospheric conditions have never been known."

The destruction seems to be greatest in Montana and northern Idaho. The fires increased in size to such an extent that the ranks of fire fighters had to be augmented with troops from Fort Missoula in fighting a fire on the Blackfeet and from Fort George Wright at Spokane, Washington, to assist in fighting the fires on the Kaniksu. California experienced serious forest fires in the early part of summer, with bad brush fires in the extreme north end of the State.

A merger of the General Adhesive Mfg. Co., Inc., with The National Gum & Mica Co., became effective July 1, 1926, and makes this new company unquestionably the largest in this industry in the world. It places under one control not only The National Gum & Mica Company and the General Adhesive Mfg. Co., but also includes in the merger National Gum & Mica Co., of Canada, Ltd., Meredith, Simmons & Co., Ltd., of Toronto and Montreal, Spier, Simmons & Co., Inc., and Finishing Compounds, Inc. The three last named enterprises were subsidiaries of The General Adhesive Mfg. Co., Inc.

The Reliance Electric & Engineering Company, Cleveland, has just placed a contract with The Austin Company, engineers and builders, for a new addition to its main plant. The new unit will be 40x80 feet, two stories high. Construction was started the latter part of August. The iron work will be completed in forty working days, according to The Austin Company.

Mr. Samuel Arnold, 3rd, has been appointed as the Pittsburgh District representative of the Pennsylvania Pump & Compressor Company, Easton, Pa.

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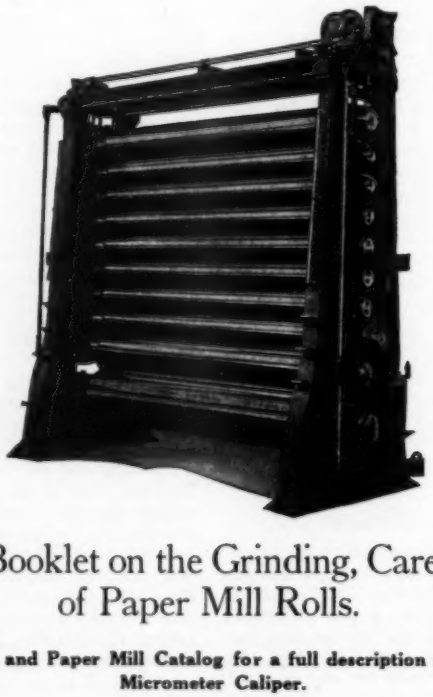

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NEW YORK CITY NEWS

Albrecht Pagenstecher Dead

Albrecht Pagenstecher, who organized several of the largest pulp and paper companies in the United States, died on August 6 at his residence in Cornwall, N. Y., in his eighty-eighth year. Mr. Pagenstecher is credited with having introduced into the United States the making of wood pulp. The ground wood took the place of rags in papermaking, making it possible to produce paper, particularly print paper, on a much larger scale. The first pulp mill began operations in Curtisville, now Interlaken, Mass. Mr. Pagenstecher was also a pioneer in the Canadian field, organizing the Laurentide Pulp Company at Grand Mere, Quebec, of which he was the first president. Other concerns that he assisted in organizing were the Hudson River Pulp and Paper Company, the Montague Paper Company, the Turner's Falls Pulp Company, the Keith Paper Company, the Central Paper Company of Muskegon, Mich., and the Manufacturers' Paper Company. For many years he was a director of the International Paper Company, which had absorbed several of the plants in which he held large interests. He was born in Osnabruck, Prussia, in 1839. A widow, seven children and seventeen grandchildren survive him.

I. P. Purchases Timber Limits

According to an announcement made from the general offices of the company in New York, the International Paper Company has purchased the timber limits, totalling about 420 square miles, of the Chaleurs Bay Company on the Ste. Anne de Restigouche River, across from Campbellton, N. B., Canada. The purchase price is said to be about $1,000,000, and the tract will be used as a reserve for a newsprint mill soon to be erected nearby.

The International Paper Company announced also that it is enlarging its kraft paper mill at Bastrop, La., to more than double its present capacity. Southern pine is used in manufacture at this mill, its cheapness and proximity making the mill a low-cost producer. It is at this plant that the I. P. Company manufactures its well-known line of "Gator Hide" kraft paper.

D. A. Crocker, secretary of the Salesmen's Association of the Paper Industry, has been appointed by President Seymour N. Sears of the National Council of Travelling Salesmen's Association to the post of chairman of the Medical Advisory Committee of the latter organization. This position automatically makes Mr. Crocker a member of the Ways and Means Committee of the national association.

The United States Paper Mills, Inc., of Chambersburg, Pa., have opened a New York sales office at 51 East Forty-second street, in charge of Dunbar A. Rosenthal, president of the company.

The report of the United Paperboard Company, Inc., with principal offices in New York City, for the year ended May 29, 1926, shows net income of $292,528 after taxes, depreciation, etc., equal, after preferred dividends, to $1.78 a share earned on the $12,000,000 common stock outstanding. This compares with $241,835 or $1.35 a share in the preceding year. The company had total assets of $14,547,829 at the close of the last fiscal year, while the surplus was $846,026, against $749,302 at the end of the preceding year. Gross profits for the year amounted to $636,511, compared with $541,835 in the previous year.

Daughter Contests Lyman's Will

Through her mother, Mrs. Marguerite Lyman, as guardian, 10-year-old Louise Marguerite Lyman has filed suit in the Surrogates Court here for a contest of the will of her father, Chester W. Lyman, vice president of the International Paper Company and long a prominent figure in the paper industry, who died in Boston last April. Mrs. Lyman divorced Mr. Lyman in 1920, and lives with her daughter at Boulevard Versailles, St. Cloud, France.

Mr. Lyman's will, in accordance with an agreement made at the time of the divorce, created a trust fund of $95,000 for his wife. Upon her remarriage or death the income is to be paid to her daughter and she also has a remainder interest of a maximum of $65,000. The two largest beneficiaries under the will are two sons of a sister, Mrs. Delia Porter, of New Haven, Conn. They receive $50,000 legacies and one-half of the residuary estate. Mrs. Porter receives only personal effects but the will explains that the sons are expected to provide for her comfort. The suit charges Mrs. Porter with undue influence in connection with legacies provided for her sons. The will gave $53,000 to Yale University and $25,000 to the Hopkins Grammar School.

Daniel J. O'Connell, president of the Box Board and Lining Company, 10 Grand street, New York, sailed on August 7 accompanied by Mrs. O'Connell and their two children for a two months' pleasure trip to Europe. The Box Board and Lining Company has announced that Anthony S. Gaccione, hitherto with Gaccione Bros. & Company, Inc., of New York, is now in charge of its paper stock department which supplies raw material to board and paper mills.

The Multitone Paper Sales Corporation, of New York City, was incorporated a few days ago under New York State laws with a capital of $350,000. G. and G. Carpenter, Jr., and E. J. Koncelik were the incorporators, while Blake, Burham, DeNilhau & Conwell, of 2 Rector street, New York, represent the corporation.

Benjamin Gottesman, vice president of the Hudson Trading Company, general paper merchants and importers of 270 Madison avenue, New York, recently returned from a three months trip abroad, during which he visited his firm's connections in the Scandinavian countries and elsewhere on the Continent.

A meeting of the American Waxed Paper Association is scheduled to be held on Thursday, September 23, at the Hotel McAlpine, N. Y.

The Standard Paper Manufacturing Company, with mills in Richmond, Va., has moved its New York offices to larger and better appointed quarters in the Vanderbilt Concourse Building, 52 Vanderbilt avenue, where M. F. Montague, manager of sales, is in charge, assisted by R. E. Estes. The company carries a complete line of samples of the papers it makes in this branch office.

H. Reeve Angel & Company, paper importers and mill agents of 7 Spruce street, New York, have been elected to membership of the Swedish Chamber of Commerce of the United States of America.

Walter R. Hicks and Albert T. Hicks, of Daniel M. Hicks, Inc., suppliers of raw material to paper manufacturers of 200 Fifth avenue, New York, enjoyed their vacations at Shelter Island, N. Y., during August. Leonard M. Hicks, of the same firm spent his vacation cruising on Long Island Sound.

The Texas Gulf Sulphur Company, with offices at 41 East Forty-second street, New York, reports for the quarter ended June 30 last net earnings of $1,859,918, equal to $2.93 a share on the 635,000 capital shares outstanding, compared with $1,282,284, or $2.02 a share, in the similar quarter a year ago. Net earnings for the first six months of 1926 amounted to $3,790,542, or $5.97 a share, against $2,695,377, or $4.24 a share, in the same time last year.

At a recent meeting of the Board of Directors of the National Paper and Type Company, of New York, F. P. Maddox was elected president and general manager of that company, succeeding H. C. Lewis, general manager, who died February 5 last, and R. W. Nelson, president, who died July 28 last. The selection of Mr. Maddox by the board was a logical one,

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See page 466 in the 1926 Paper and Pulp Mill Catalog

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eminently satisfactory from all points of view. He is the oldest member of the organization in point of service, having been with the company for 20 years, for the past 19 years as manager of the Havana branch. Mr. Maddox, however, can count a total of 30 years of business life in Latin-America. It is his plan to leave shortly for a several months' trip through part of his field.

Jesse W. Long, manager of the New York office of S. Birkenstine & Sons, Inc., importers of and dealers in paper mill supplies with principal offices in Chicago, and chairman of the Foreign Trade Division of the National Association of Waste Material Dealers, Inc., returned recently for a two months' trip to Europe where, aside from attending to business errands, he conferred with a group of European shippers of papermaking rags on trade customs.

PACIFIC COAST NEWS

Late in August, articles of incorporation of the Pacific Wood Pulp, Inc., were filed at the Cowlitz county auditor's office in Kelso, Washington. Charles F. Schaub, president of the Pacific Straw Paper and Board Company; George Sweet of that company and A. T. Peterson and H. L. Copeland of Longview are incorporators. While no definite site for the mill has been determined as yet, it is possible that the plant will be located at Longview.

The company is capitalized for $600,000, consisting of 100,000 shares of 8 per cent cumulative stock of $5 par value and 100,000 shares of common stock of $1 par value. According to Mr. Schaub, the financing of the company was completed with eastern capital. The mill will represent an investment of more than $375,000 and will make ground wood pulp.

Because it could not secure the necessary wood pulp, it has been necessary during the past year for the Pacific Straw Paper Company to turn down many orders for heavy board. The bulk of the output of the new plant will be used in the Pacific company's operations according to Mr. Schaub.

Inland Empire to Double Capacity

Plans for almost doubling the capacity of the Inland Empire Paper Company plant at Millwood, a few miles from Spokane, Wash., were approved at a special meeting of the stockholders at the plant offices recently. A capital increase of $350,000 was voted, making the total capital $2,000,000, of which $1,000,000 is preferred and $1,000,000 common. The additional $350,000 is preferred.

Work will go forward at once. The additions will include another wood digester, making three in all; a 500-horsepower boiler, the most powerful of a battery of five; additional grinders for making mechanical pulp, and a new paper machine, larger and faster than any of the three now operating. It will increase production from 2,800 tons to 5,000 tons a month.

Trustees were elected as follows: President, Judson G. Rosebush, St. Petersburg, Fla.; vice president, L. M. Alexander, St. Petersburg, Fla.; secretary and assistant treaurer, W. A. Brazeau, Millwood; treasurer and general manager, W. E. Rosebush, Millwood, and W. H. Cowles, Spokane. Mr. Cowles replaces John E. Alexander of Port Edwards, Wis., who is unable to make the necessary trips here to be active on the board. The others were all re-elected.

Will Make Kraft from Fir Slabs

The first plant in Oregon to convert fir slabs into Kraft pulp and paper is being built by the St. Helens Pulp & Paper Company at St. Helens, Oregon. Slab refuse from the saw mills in the vicinity will be used.

The refuse slabs will be sorted and, after removing the bark, converted into chips of the proper size for digesters. The chips will then be transported by barges on the Columbia River to the paper mill, where they will be stored until it is desired to put them through the digesters. A number of intricate problems are involved in this method.

Power for the mill will be supplied by a 60-cycle turbine generator rated 1,500 kilowatts at 80 per cent power factor delivering current at 480 volts, 3-phase. The turbine will be arranged to operate at 225 pounds gauge steam pressure, with dry steam, and two-inch absolute back pressure. Steam at about 20 pounds gauge pressure will be extracted from one of the first stages of the turbine, this steam being used for heating the plant and for process work in the mill. The extracted steam will be maintained constant by an automatic extraction mechanism built by the General Electric Company, who will supply the complete electrical equipment for the mill, including the turbine.

William Pierce Johnson

William Pierce Johnson, late chairman of the board of directors of the Crown-Willamette Paper Company, whose death occurred recently in Paris, was well known and highly regarded by a few of the leading business men of Portland, Oregon. Because he made his headquarters in San Francisco he was not widely known in the city.

Mr. Johnson was long associated with the paper industry in Oregon, being the founder of the Willamette Pulp and Paper Company in Oregon City in 1890. For some time the pulp was manufactured at Oregon City and shipped to San Francisco by boat and manufactured into paper at Stockton mill. He gave particular attention to the manufacture of the paper in California.

At that time he was represented in Oregon by the late Norman Lang and was accustomed to visit Portland and the plant at Oregon City once or twice a year. When the Willamette Pulp and Paper Company was consolidated with the Crown Pulp and Paper Company, Mr. Johnson became president of the organization. He held that position until 1923, when he was made chairman of the board.

Theodore Osmund, President of West Coast Co.

Theodore Osmund, who was connected for eighteen years with the official force of the Hawley Pulp and Paper Company at Oregon City, has resigned his position to become president of the West Coast Pulp and Paper Company. The mills of this company are located at Tumwater, Washington, near Olympia.

For the past fourteen years Mr. Osmund was secretary-treasurer of the Hawley Pulp and Paper Company. His position has been filled by Eber A. Chapman, formerly assistant secretary-treasurer, and Robert Peters of Portland, who was with the Price Waterhouse Company, has taken Mr. Chapman's position.

The Tacoma Tablet Company has, through a representative, been conferring with the Salem, Oregon, Chamber of Commerce and with officials of the Oregon Pulp and Paper Company, with a view to establishing a paper converting plant in Salem. In event the plant is established, raw material from the Oregon Pulp and Paper Company would be used. It was reported that the proposed plant would cost in excess of $100,000.

Statistics recently available show that the gross earnings of the Crown Willamette Paper Company in the six months ending June 30, 1926, were $2,890,284. After deductions amounting to $1,430,138 were made for interest, depreciation, depletion and Federal taxes the net amount was $1,460,146.

During the six-month period the earnings statement of the Pacific Mills, Ltd., subsidiary controlled by the Crown Willamette Company, show a gross earnings of $1,124,367 and a net of $395,257.

Equipment in the way of an acid tower and an additional digestor will be added to the Columbia River Paper Mills Company at Vancouver, Washington. A contract has also been let for the construction of foundations for two new blow-holes.

The Bristol Company, Waterbury, Conn., announces the opening of a branch sales and service office in the U. S. National Bank Building, Denver, Colorado. Mr. H. T. Weeks will be the representative in charge.

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Canadian Section

Wharf and Warehouses at Cornerbrook

The Newfoundland Power and Paper Co., of Cornerbrook, Nfd., which is subsidized by the British and Newfoundland Governments and the W. G. Armstrong Whitworth Co., has just granted a contract to the T. E. Rousseau Company, of Quebec, for the construction of a wharf and warehouses, at a cost of approximately $250,000, at Cornerbrook. The work has been commenced and the contract calls for its completion by November 1st next.

The new wharf will provide docking accommodation in convenient proximity to the big pulp and paper mill for the vessels transporting its products to England and elsewhere. It will be 400 feet long and will require the driving of 4,500 piles in 18 feet of water and 42 feet in the bed of the river. Two warehouses are to be constructed by the contractors. Both will be of steel and concrete construction and will be two stories high, the dimensions of the larger of the two being 600 by 130 feet, while the smaller one will be 400 by 130.

International Paper Company is reported as contemplating the building of pulp mills in Newfoundland. The company has been negotiating for the purchase of large tracts of wooded lands paralleling the northeast coast of the island, with some large holdings stated to be already in the possession of the company. The intention is to build a large pulp mill at one of the harbors on the coast, and to ship to the United States and Canada from the company's own dock and warehouse.

The study of the probable cost of future turbine installation in Eastern Canada indicates that between 1926 and 1945 about $1,300,000,000 will be required in capital expenditure, or that the average expenditure per year for the next twenty years will be close to $65,000,000. In making this estimate the Dominion Water power Branch of the Department of the Interior concludes that of this total about $600,000,000 will be required in Ontario and nearly $700,000,000 in Quebec.

Demand for Newsprint Faster Than Production

An analysis of the newsprint production and consumption figures for July recently published by the News Print Service Bureau shows a remarkable and very gratifying condition: Canadian mills operated at 99 per cent of their rated capacity, stocks of paper in the hands of producers and publishers are negligible, and the usually dull midsummer months have kept the mills fully employed without allowing stocks to accumulate so that if the usual fall impetus to consumption of paper is experienced, which appears altogether likely, men in close touch with the industry say that there is likely to be an actual shortage of this commodity.

It is now generally conceded that there will be no overproduction this year in spite of the tremendous increase in the capacity of the Canadian mills, which by the end of December will be well over half a million tons more than at the beginning of the year; and in some quarters it is considered unlikely that there will be any overproduction in 1927.

The possibility of a strike in the pulp mills of Norway may have a decided effect on the Canadian pulp business. The wage agreement between the Norwegian mill workers and operators terminated at the beginning of last month and the threatened strike is considered almost inevitable. Should it continue for several weeks, the Canadian pulp business will feel its influence, though the American market will be the first to be affected.

R. W. Leeper has recently been appointed to the staff of the Canadian General Electric Co. in connection with their pulp and paper mill division. Mr. Leeper has had considerable experience along this line: for several years he was specialist in paper and textile mill work at the Cincinnati office of the General Electric Co., and for six years he was consulting engineer with the Management Engineering and Development Co., of Dayton, Ohio, and with H. S. Taylor, of Dayton and Montreal.

J. Frater Taylor, former president of the Spanish River Pulp and Paper Mills, who is a director of the Lake Superior Corporation, the Algoma Steel Corporation, and various mining and steamship companies, has been appointed managing director of Sir W. G. Armstrong-Whitworth & Co., England.

QUEBEC

Paper Mill Town Organized in Northern Quebec

Officials of the Ontario Paper Co. have announced that the new paper mill town at Outarde Falls has been founded and partly organized on the North Shore of St. Lawrence, some distance below Quebec City. Workingmen have completed the construction of dwellings, hospitals, schools, convents and a city hall.

The new town is nine miles from the St. Lawrence river, some two hundred miles from Quebec, on the Outarde River. A population of over 500 is already living there. The Ontario Paper Co. has started developing the Outarde falls, which have a potentiality of about 50,000 h. p., but only about half of that force will be harnessed for the present.

The company possess some 1800 square miles of timber limits near the falls, which were leased from the Provincial government two years ago. According to its lease the company, which is owned by the Chicago Tribune and has its chief Canadian mills at Thorold, Ont., has to erect mills between now and 1930. It is planned to erect a sulphite mill now, and later on a paper mill from which newsprint will be forwarded to Chicago.

In addition to building a model town, the company has also built a few miles of railroad which will be used to convey construction material.

Large Group Insurance Policy

One of the largest group insurance policies ever written in Canada by a Canadian company has been completed and issued by the Sun Life Assurance Co. of Canada, in favor of 2,000 mill employees of Price Bros. & Co. The policy involves the sum of nearly $3,000,000 and differs somewhat from most group policies in that it carried accident and sickness clauses, in addition to the customary death and total disability benefits, even though such accident or sickness may be occasioned by circumstances outside the control of the company.

The provisions of the policy apply to all employees in the pulp and paper mills operated by the company at Riverbend, Jonquières and Kenogami, and to salaried employees who receive less than $2,000 a year. It is understood that the present policy is but the preliminary to a scheme under which all employees of the company will receive the benefit of group insurance.

Changes in Laurentide Organization

Harry E. Bates, for some years a member of the Laurentide Company Limited's organization, has recently assumed the duties of paper mill superintendent. Mr. Bates' work as personnel director of the Laurentide organization has been taken over by T. Rodgie McLagan.

Mr. Bates is a graduate of McGill in engineering and has had extensive experience with various organizations notably

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Antifriction Bearings on Breast, Table, Wire, Wet Felt and Dryer Canvas Rolls.

Worm and worm wheel driving mechanism for dryers, to ensure safe running at high speed.

Provision has also been made for mechanical handling of the heavy rolls when changing wires and felts.

P17

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See page 336 in the 1926 Paper and Pulp Mill Catalogue

as resident engineer on the existing Quebec bridge. He served throughout the war with the Canadian forces and since his return from overseas has been connected with Laurentide. Mr. Bates supervised, in the interest of Laurentide, the construction of the two latest paper machines built by Dominion Engineering for that company. Mr. McLagan is also a McGill graduate and an overseas veteran. He was for some time assistant to the manager of the Dryden Pulp and Paper Company.

According to a recent announcement of Edward Beck, secretary of the Canadian Pulp & Paper Association, 70 per cent of the total amount has been subscribed for the new Cellulose Building to be erected on the McGill campus. In view of the fact that this is the vacation season, and that already $270,000 of the $350,000 needed by October 1st has been received, the outlook is regarded as very favorable.

Anticosti Corporation Organized and Financed

As announced in these columns last month, the timber resources of the Island of Anticosti, in the Gulf of St. Lawrence, have been sold by Senator Gaston Menier, of France, to the Anticosti Corporation, which is owned jointly by the St. Maurice Valley Corporation, the Port Alfred Pulp and Paper Corporation and The Wayagamack Pulp and Paper Co. Geo. McKee, president of the Port Alfred Corporation and managing director of the St. Maurice Valley Corporation, has been chosen president of the new concern.

The three controlling companies have agreed: (1) to purchase from the Anticosti Corporation a minimum total of 390,000 cords of pulpwood during each of the three years commencing November 30th, 1926, and 420,000 cords during each year commencing November 30th, 1929; (2) To pay to The Anticosti Corporation in each year: (a) a sum equal to the full amount of the Corporation's operating expenses including depreciation; and (b) as long as any of their Series A bonds are outstanding a minimum stumpage fee of $2.40 for each cord of pulpwood purchased, whether or not the minimum number of cords agreed to be taken is cut or delivered. The above stumpage payment is equivalent to the current stumpage fee of approximately $1.40 per cord now payable to the Province of Quebec on leasehold timber areas, plus the usual depreciation allowance of $1 per cord.

The Anticosti Corporation has successfully floated an issue of $6,000,000 fifteen-year, first mortgage 6 and a half per cent sinking fund gold bonds, and a $3,000,000 issue of 7 per cent sinking fund cumulative preference shares.

It is provided that if at any time the amount of bonds or preference shares of the Corporation shall be increased beyond $6,000,000 principal amount of bonds or $3,000,000 par value of preference shares, the aggregate minimum amount of stumpage charges payable by the three owning companies shall be proportionately increased.

Anticosti has an area of about 3,100 square miles, estimated to contain about 15,000,000 cords of pulpwood, mainly spruce and balsam. Reforestation conditions on the island are unusually favorable, natural growth being estimated at approximately 450,000 cords per annum thereby providing the new owners with an almost inexhaustible supply of pulpwood.

Mrs. John H. Liddell et al. recently sold to the Dominion Engineering Works a vacant lot in Lachine with a total area of 474,074 square feet, fronting on the public road, for the sum of $701,000.

Riordon Secures Another German Cellulose Authority

C. B. Thorne and Carl Riordon, of the Riordon Pulp Corporation, have recently returned from Europe, having engaged the services of prominent chemists for their new research laboratories at Hawkesbury, Ont. As noted last month, among these is Professor Emil Heuser, one of the leading authorities on pulp and paper chemistry and editor of "Der Papierfabrikant." In addition, they have also secured the services of Dr. Lorenz, one of the world authorities on colloid chemistry. With these and other additions it is the intention of International Paper, which owns the Riordon Pulp Corporation to proceed with an extensive programme of research work in their newly-equipped laboratories.

F. G. Robinson, of the Riordon Sales Corporation, has sailed for Japan with a view to extending the market for Riordon high-grade bleached sulphite in that country, where the rayon industry is expanding rapidly. The Japanese already import a certain quantity of Canadian high grade pulp for their paper requirements.

The St. Anne Power and Paper Co., Ltd., has increased the number of its directors from seven to nine.

Dubuc May Control Chandler Mill

One of the most interesting revolutions of the wheel of fortune in industrial life in Canada that has been witnessed for some years may be the return of J. E. A. Dubuc as head of the St. Lawrence Pulp and Lumber Corporation, known more familiarly in the pulp and paper industry as the "Chandler property". A notice has been sent to holders of the first mortgage 6 per cent bonds of the corporation to secure their consent to a sale of these bonds at a rate of 50 cents on the dollar. Financial counsel understands that for some time past Mr. Dubuc has been endeavoring to form a syndicate in the United States for the purchase of these bonds and that the offer of 50 per cent originates with him. A cash payment of $40,000 has been made as a guarantee of good faith.

The Chandler mill originally was a subsidiary of the North American Pulp and Paper Companies Trust, which gave way to the Saguenay Pulp and Power Co. When difficulties arose through the connection of these industries with Sir Frederick Becker, a lease of the St. Lawrence Pulp and Lumber Corporation's mill was made to the Bay Sulphite Company. Late in 1923 both the Bay Sulphite and Chicoutimi mills went into liquidation, and on February 1st, 1924, neither one was able to meet payment of interest and principal on the St. Lawrence bonds. At the same time the St. Lawrence mill at Chandler was shut down. The mill was afterwards opened and for a time operated under lease with option to purchase by International Paper. This company, however decided not to purchase the property as it would have required over $1,000,000 in mechanical improvements to put the mill on a profitable operating basis.

Entire Production of Kipewa Mill in Rayon

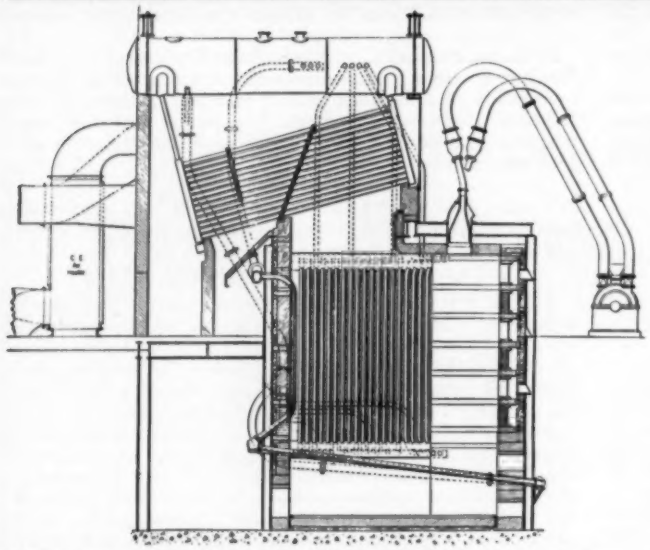
The Kipawa Mill of the International Paper Co. at Temiskaming, Quebec, is now devoted entirely to the production of sulphite pulp to be used in the manufacture of rayon. Reduction of rayon prices on June 1 last has stimulated sales to an extent that the demand for raw material has made this step necessary.

Kipawa produces approximately one-half of all wood-pulp used in the manufacture of rayon throughout the world. Its product goes to a number of foreign countries, including Japan, the center of natural silk production. A representative of the mill has just sailed for Japan to aid in developing this market for raw materials used in making rayon.

The Ste. Anne Power and Paper Co., which are at present erecting a mill at Beaupré, twenty-two miles below Quebec City, have ordered two 234-inch news machines from Dominion Engineering Works, who have already started constructing them.

Construction of two new digesters at the St. Maurice Division of the St. Maurice Valley Corporation has been completed and the digesters have been started up. Carl Jentz has been appointed superintendent of the sulphite mill and John Gately is engineer in charge of statistics. Thurston Iversen, superintendent of the kraft mill, has returned from his honeymoon: he married Miss Florence Comeau of Three-Rivers, a short time ago and was presented with a silver tray by the staff.

E. G. M. Cape, who are building an extension to the paper mill and grinder room of the St. Lawrence Paper Mills, at Three-Rivers, have made very good progress. The new grinders are being erected and the machine room has reached



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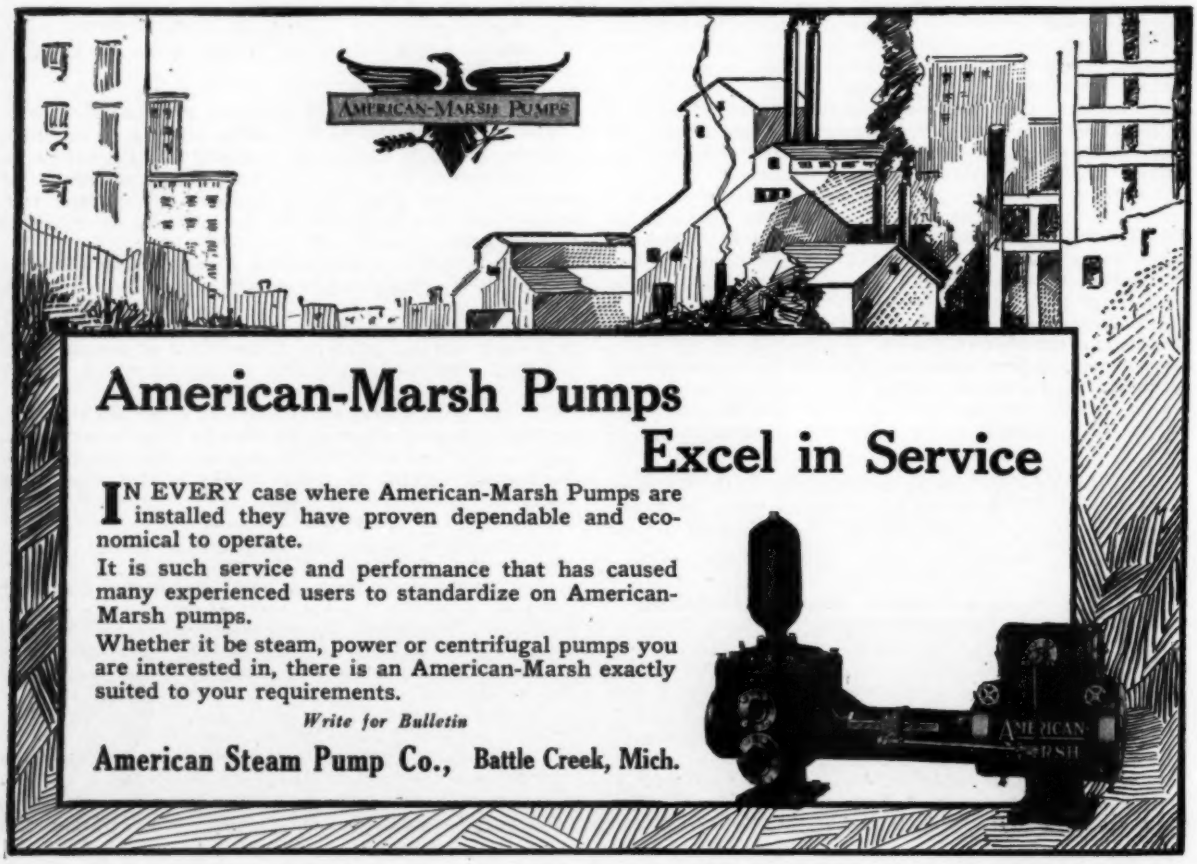

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a point where the erection of the paper machines could be undertaken almost any time. It is understood that the Dominion Engineering Works have the new machines practically completed.

The extensions to the grinder room and machine room of the Belgo Division of the St. Maurice Valley Corporation at Shawinigan Falls has been completed by Wm. I. Bishop, Ltd., and the installation of the ten Voith hydraulic type grinders, supplied by the Waterous Co., and of the two 234-inch Walmsley news machines is going forward. Two new sulphite digesters, supplied by Dominion Bridge Co., are also being put in.

Laurentide Company, at Grand' Mère, is building an extension to its boiler room to house three new 1000-h. p. units of the very latest types, using Kitwell boilers and pulverized fuel. The equipment is being supplied by the Combustion Engineering Corporation.

Canada Paper Company has completed the rebuilding of its soda mill, which is now equipped to produce pulp by the Keebra process. It is the first mill in Canada to adopt this process, which is an improved soda process in which the wood is cooked with a mixture of caustic soda and sodium sulphite. Oliver filters have been installed for washing the stock from the digesters and a new Stebbins bleacher has also been put in.

At East Angus, the Brompton Pulp and Paper Co. have practically rebuilt their old wooden mill in brick. Two new vertical digesters have been put in and started up and installation of four new, rotary 2¾-ton digesters has been completed. An Oliver filter for handling the lime sludge from the causticizers and a Dorr sedimentation thickener for handling white water from the newsprint mill have also been added.

At Bromptonville the company, on May 1st, started the construction of a screen room, paper machine room and finishing room at right angles to the original groundwood mill. Construction is practically complete and installation of the 234-inch Walmsley news machine has been started.

H. G. Welsford has been appointed general manager of the Dominion Engineering Works to fill the vacancy caused by the death of John Overn, Jr. Mr. Welsford has been assistant general manager of the company for some time, and has been closely identified with its development and expansion.

F. J. Campbell, manager of the Canada Paper Co., and family, are on a trip to Europe, where they are visiting Great Britain, France and Sweden.

E. A. Thomas, well known in collegiate athletics, has joined the Montreal staff of the Riordon Pulp Corporation. He recently graduated from Queen's University, where he starred in football, basketball and tennis.

Capt. A. G. McLerie, general manager of the Fairchild Aerial Surveys of Grand 'Mère, Que., died of pneumonia at Kenora, Ont., on August 4th, at the age of 37. The funeral was held at Kenora.

The hydroplanes of the Canadian Airways, Ltd., which has its base in Three-Rivers, have concluded the task assigned to them of visiting the great falls on the Hamilton River in Ungava, and of taking photographs demonstrating the possibilities of hydro-electric developments. Mr. H. L. Seller, photographer of the expedition, arrived in Three-Rivers recently and stated that the trip, while arduous, had been full of interest. Excellent views had been taken of the great falls, and had been forwarded to the Minister of Lands and Forests, for whose department the survey was made.

Angus McIntyre, superintendent of the St. Francis Mill of the Canada Paper Co., at Windsor Mills, for the past sixteen years, severed his connection with the company and is taking a well earned rest and holiday, motoring to Old Orchard and the White Mountains.

At a recent meeting, preferred shareholders of Brompton Pulp and Paper Co. consented to a compromise in the by-laws and approved the proposed new financing which the company is shortly to carry out. Arrangements have been made for the sale of $4,183,000 par value bonds, and it is intended that the proceeds will be applied to the redemption of the outstanding 6 per cent general mortgage bonds and the 8 per cent convertible mortgage bonds, and in payment of the newsprint mill now under construction at Bromptonville. Construction of the new mill is running about one month ahead of schedule and expenditures are well within estimated costs, so that, providing there is no tie up in the delivery of the machinery and other equipment, the new mill, which will have a capacity of from 100 to 120 tons a day, will be producing paper by December 1st.

Laurentide Presents Splendid Report

The annual financial report of Laurentide Company for the twelve months ended June 30th stands as a credit to the administration of the oldest newsprint manufacturer in Canada, for despite the $5 reduction per ton in the price of newsprint effective for the last six months of the period reported upon, earnings were well maintained. In fact, the moderate shrinkage in operating profits was offset by increased profits from miscellaneous sources to the extent that with somewhat smaller interest payments net profits were equal to 6.6 per cent on the capital stock, as compared with 6.6 per cent in 1925 and 7.2 in 1924.

As expected, the balance sheet is the outstanding feature of the report, with a decided improvement in working capital position, which is up some $660,000 and now stands at $7,966,604. The bank loan which at the end of the last fiscal year stood at over $2,300,000 is completely wiped out and the company has more cash than it has shown in several years.

Anglo-Canadian Construction Progressing

Though plans of the new pulp and paper mills of the Anglo-Canadian Pulp and Paper Co., at Limoilou, are completed, President Frank Clarke recently announced that it would take at least six weeks before tenders could be called for.

Concerning the new wharf, which is at present under construction on the St. Charles River, at the site of the mill, Mr. Clarke voiced his satisfaction with the progress being made. That it was going ahead rapidly was evident from the fact that already four of the nine cribs which will form the foundation of the wharf have been sent into the water. They are at present being topped off and will be sunk into position when their places have been prepared by dredging operations.

R. A. McInnis, who recently resigned his position as manager of the Abitibi Power and Paper Co.'s mill at Iroquois Falls, Ont., has been appointed general manager of the Anglo-Canadian company's mills.

A series of lots located at Paugan Falls on the Gatineau have recently been closed to prospecting for minerals and staking. This action was taken in view of the forthcoming large power development to be undertaken very shortly, which might affect the land stakes and result in damage claims.

Documents totaling 675 pages and involving a sum of $250,000,000 were recently deposited at the registry office of Wright County, at Hull, by the Canadian International Paper Co. They consist of: (1) a lease for the unpatented lands sought by the Hull Electric Co. in its development of the Paugan Falls Power site, obtained from Hon. Honoré Mercier, Minister of Lands and Forests at Quebec, in 1922; (2) a deed of sale for "one dollar and other value," from the Hull Electric Co. to the Gatineau Power Co. of the Paugan Falls power site; (3) a deed of sale by the Canadian International Paper Co. to the Gatineau Power Co. of its properties at Farmers Rapids and Chelsea, also for "one dollar and other values;" (4) a trust deed, mortgage and

A few months from now— you will again face the problem of

Excessive Steam Costs

Briner Economizer.

Foresighted mill managers are preparing now to hold down the annual Winter rise in production costs with the

Briner Economizer

LICENSED UNDER PATENTS OF E. A. BRINER AND JOHN E. ALEXANDER

For Utilizing Waste Vapor to Heat Machine Rooms

Facts and figures charting the experience of production leaders in the industry substantiate the positive saving secured with Briner Economizers. From a standpoint of first cost and maintenance cost, installations have proved profitable investments in every mill using them. This record should interest you.

Temperature of machine room air supply has been raised from 40° below, to 70° above without the use of steam.

The colder the weather, the greater the number of heat units recovered from the vapor. Heavy boiler load in extreme cold weather is relieved.

Any desired temperature thermostatically maintained.

If you are interested in taking the "edge" off competition this winter, ask our Engineers to tell you what you can expect from the Briner Economizer in your mill.

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30 EAST 42nd STREET, NEW YORK

549 W. Washington Blvd.
CHICAGO, ILL.

1117 Tacoma Ave.
TACOMA, WASH.

ROSS ENGINEERING of CANADA, LIMITED

NEW BIRKS BLDG., MONTREAL

pledge issued by the Canadian International Paper Co. to the Royal Trust Co., of Montreal, whereby it pledges its properties to the value of $250,000,000, as security for its first issue of gold bonds.

Brompton Pulp and Paper Co. recently applied to the Quebec Public Service Commission for the right to construct a 50,000-volt transmission line to link up its new mill at Bromptonville with the lines of the Continental Heat and Light Co.

Official notice has been received by the Department of Lands and Forests that the Duke-Price Power Co. intends to enlarge certain dams and other structures on the Grande Décharge and the Petite Décharge, outlets of Lake St. John. This means that further power development will be carried out by the company in the course of the next few months.

Leo E. Charles, general manager of the plants of the Victoria Paper and Twine Co. of Toronto and Montreal, William E. Howe, of Buffalo, N. Y., holder of large interests in both Canadian and American firms, Harold Goldsborough, director of the Hodge Sheriff Paper Co., and a party of twenty-four salesmen from the Victoria Paper and Twine Co. recently visited the mills of the Wayagamack Pulp and Paper Co., Three-Rivers, where they were cordially received.

A section of the accountancy and sales departments of the Ottawa division of the Riordon Pulp Corporation has been transferred to the Montreal division. Nine employees were shifted and the change necessitated considerable readjustment work for both the Ottawa and Montreal staffs.

The Trimbey Machine Works, Glens Falls, N. Y., recently shipped duplicate metering systems and consistency regulators to the Port Alfred Pulp and Paper Corporation for their new paper machines. They also recently installed a system for the Belgo division of the St. Maurice Valley Corporation, and are now building systems for the Manitoba Paper Co., St. Lawrence Paper Mills, Fort Francis Pulp and Paper Co., and Brompton Pulp and Paper Co.

ONTARIO

Mattagami Assets Advertised for Sale

Official notice has been published advertising a judicial sale of the assets and undertakings of the Mattagami Pulp and Paper Co., Ltd., to take place on Monday, October 11th, 1926, at 2:30 p. m., at Osgoode Hall, Toronto.

The property includes a site of 1,329 acres at Smooth Rock Falls, with a sulphite mill rated at a capacity of 150 tons a day but producing about 190 tons, a bleaching plant with an output of 75 tons of bleached sulphite daily, a 9,000-h. p. hydro-electric development, a hotel, 94 houses, three miles of railway, water mains, sewage system, etc. There are also some 125 square miles of timber limits, and leases of water powers, and an agreement authorizing the cutting of pulpwood on 848 square miles of Crown lands.

In the event of no higher bid being obtained, the debenture holders will acquire the company: they in turn will pay off the old bondholders with accrued interest to date.

New White Water System at Abitibi

Work on the new centralized white water system of the Abitibi Power & Paper Co., Iroquois Falls, began recently with excavation in the paper mill basement near No. 5 machine for the white water tank which will be 50 by 15 and 8 feet deep. The tank will be composed of two parts, the white water tank itself and the pump pit. Into this tank will run the main trunk sewer which will cross both paper mills, and into this sewer will run the water legs from the paper machine suction boxes. These will be sealed in the sewer and the old seal boxes removed. The pumps will distribute white water to the paper machine showers by a main trunk header. One line will run to the grinder room and the surplus will be carried to the sulphite mill where it will be mixed with accepted stock. It will then pass through the new American filters which will replace the sulphite deckers. The work will be complete before the end of the year.

The Superior Paper Mills of Thorold, Ontario, is the name of a new paper mill soon to be in operation at Thorold. They will make a line of white and colored, "Superior Specialty Papers." The machinery for this mill was purchased from the old Standard Mill of the Cleveland-Akron Bag Co., Cleveland, Ohio, through the Gibbs-Brower Co., New York City, paper mill brokers.

Superintendent of Booth Mill Passes On

Thomas E. Waddell, of Ottawa, superintendent of the board mill of J. R. Booth, Ltd., collapsed recently when talking to J. Fred Booth at the mills and died shortly after from an internal hemorrhage.

He was only 37 years of age and his entire life was spent in Ottawa and Hull. He entered the employ of J. R. Booth when still a boy, and through hard work and conscientious endeavor rose until he was made superintendent of the board mill. He is survived by his widow and two children.

Spanish River Wins Rates Case

The Interstate Commerce Commission at Washington has rendered a decision in the case of the Spanish River Pulp and Paper Mills against the Ahapee & Western Railway Co. In their syllabus in this case the Commissioners say:

"Joint rates on newsprint paper, in carloads, from Espanola, Ont., to destination in Wisconsin, Minnesota, Illinois, Missouri and Iowa, and to Omaha, Nebr., found, in so far as the transportation takes place within the United States, to be unreasonable and unduly prejudicial to the extent that they exceed or may exceed by more than 4 cents per 100 pounds the rates contemporaneously applicable from Sault Ste. Marie, Ont., to the same destinations."

J. T. McLellan, construction engineer of the Backus-Brooks Company for the past five years, at Kenora, was tendered a banquet by the citizens of that town recently on the occasion of his departure for Antikokan, Rainy River district, where he will supervise the work of three more developments in that area. As a token of their esteem, the citizens presented him with a gold-headed cane, appropriately inscribed.

W. T. Coles, of the "Morning Herald," Sydney, Australia, was in Toronto recently, and also spent some time visiting pulp and paper mills in Ontario and Quebec.

Provincial Paper Mills have awarded a general contract to W. J. Tremble, of Port Arthur, for the proposed one-story addition to their mill in that city. The work, which is estimated to cost about $70,000, will be pushed to completion.

J. Myers, of New Liskeard, who is erecting a rossing plant at Charlton, is handling this season 11,000 cords of pulpwood for the West Virginia Pulp and Paper Co., Tyrone, Pa. About 8,000 cords are poplar, and the remainder spruce. Mr. Myers has represented the West Virginia Pulp and Paper Co.'s interests in northern Ontario for several years.

The Spruce Falls Power & Paper Co., Kapuskasing, will shortly erect forty houses for employees and is also considering the construction of a large modern hotel. It is understood that next year several score more houses will be built. The extension to the sulphite mill is now practically finished, and the laying of the track to Smoky Falls, fifty miles from Kapuskasing, is nearing completion.

Midland Plant Burned

One hundred and forty men were thrown out of work and $100,000 worth of damage was caused by a fire which almost wiped out the plant of the International Fibreboard Co. at Midland last month. The fire broke out in the evening, just as

Paper—Servant of Religion and Morality

The human mind demands some set standard of right and wrong. The savage bows down to sticks and stones, knowing no better standard of religious devotion. Civilized man finds morality in a long line of inspired righteousness whose record has been kept and handed on to our generation.

The Hindu reading from his Pali-Text volume of threaded palm leaves, the Chinese with his tinkling invocations painted on dangling glass, the medieval sculptor who expressed devotion in marble and stone, these felt the need of a vehicle for transmitting their homage of a power higher than they.

Our Bibles, our prayer books and our hymnals take religion from limited localities and make it universal and its benefits broadly available. Morality finds a powerful missionary in the garb of paper.

Hammermill Paper Company

ERIE, PENNSYLVANIA

the night shift was going on duty, and despite every effort to extinguish it, destroyed the greater part of the plant before it could be brought under control.

The plant was equipped with a modern sprinkler system, but it and the best efforts of the brigade were unable to cope with the fire in the main buildings. The warehouse is the only part to remain standing. As the wind was blowing from the southeast no damage was done to the sawmill of Manley Chew.

American Engineering Co., of Philadelphia, reports that Taylor stokers are being installed under two 1,014-horsepower, Babcock and Wilcox, cross-drum boilers in the new power plant of the Thunder Bay Paper Co. at Port Arthur. Preheated air will be used.

The contract has been awarded to E. Charters, of Sault Ste. Marie, for the erection of a new addition to the plant of the Manitoulin Pulp Co., at Kagawong, Manitoulin Island. The extension is to be completed by November of this year.

The first annual picnic of the Hastings Paper Mills, Belleville, was held at Twelve O'clock Point, Bay of Quinte district, early last month. There was a good attendance, and a fine program of races and sports was run off, for which valuable prizes were donated by a number of friends of the company, as well as by the organization itself.

The new machine room of the Provincial Paper Mills, at Port Arthur, is nearing completion and other construction work is progressing satisfactorily. The equipment has been ordered from England and the first shipment of machinery is expected soon. It is hoped to have the additional machine in operation by the end of the present year.

S. F. Duncan, general manager of the Provincial Paper Mills, Toronto, has gone on an extended trip to Europe.

I. H. Weldon, president of the Provincial Paper Mills, Toronto, who, with Mrs. Weldon, has been touring Great Britain and Europe for several weeks, has returned home.

Paper Sales, Limited, Toronto, have been appointed Ontario and Quebec selling agents of Cheviot box coverings, manufactured by Kamargo Mills, Watertown, N. Y.

Many members of the paper jobber and paper manufacturing industry in Toronto, and some from outside, united to do honor to John F. Ellis, dean of the Toronto paper trade, who recently celebrated the fiftieth anniversary of the Barber-Ellis Company, of which he has been a member since its inception. He was presented by the staff with a portrait of himself, painted by Wylie Greer. Thanking the members of the staff for what he termed "the highest compliment you could have paid me," Mr. Ellis returned the picture to the company, asking that it be hung in the board room beside that of the late John R. Barber, who was Mr. Ellis' partner when the firm was organized.

The Thunder Bay Paper Company has placed an order for a Nordstrom chip-drying tower to be installed in the sulphite mill at present under construction at Port Arthur. This will be the first installation of its kind in Canada, and, together with a similar tower ordered for the plant of the parent company at Wisconsin Rapids, Wis., will be the first on the Continent.

R. A. McInnis Succeeded by J. E. Patterson at Abitibi

R. A. McInnis, who joined the Montreal office of the Abitibi Power & Paper Co. in 1914 and was appointed manager of the mill at Iroquois Falls in 1917, has tendered his resignation to accept the position of general manager of the mills at present under construction at Limoilou, Que., for the Anglo-Canadian Pulp & Paper Co. While at his request Mr. McInnis was relieved of his more exacting duties at once, he consented to spend a part of the next couple of months at Iroquois Falls where his advice and experience could be taken advantage of.

In keeping with the policy of the company of not going outside of the organization, J. E. Patterson has been appointed mill manager. In point of service Mr. Patterson is one of the oldest employees of the company; he joined the mill staff in 1913 in a subordinate clerical position, and by dint of hard work and application gradually rose, through the efficiency department, to be general superintendent, and has now been made general manager of the mill.

"Abitibi Research Corporation"

Recognizing the advantages of more specialized laboratory research work, the Abitibi Power & Paper Co. has decided to separate entirely from the operating organization the research laboratory. In order to facilitate this work a new company has been formed, called the "Abitibi Research Corporation," of which R. W. Hovey has been made president and manager.

Mr. Hovey will have complete charge of all laboratory experiments, but as many of these will have to be carried out in connection with actual mill operations, it will require close co-operation between the operating and research departments.

C. V. Syrett Acquires Wilkinson Paper Interests

Charles V. Syrett, for many years managing director of the Victoria Paper & Twine Co., Toronto, and former president of the Garden City Paper Mills and of the Canadian Vegetable Parchment Co., St. Catharines, who resigned several months ago, has purchased the interest of E. H. Wilkinson in the Wilkinson Paper Co., Toronto, which business has been established for a number of years. Mr. Syrett will add several new lines and the stock carried will consist of sealright containers, vegetable parchment papers, and several unique and distinctive ranges of wrapping papers.

E. H. Wilkinson, who retires from the Wilkinson Paper Co., will devote his time exclusively to direct mill representation, and will handle a complete line of pulp, paper and paper specialties. He will operate under the firm name of Wilkinson's Limited, and has offices in the McKinnon Building, Melinda street, Toronto.

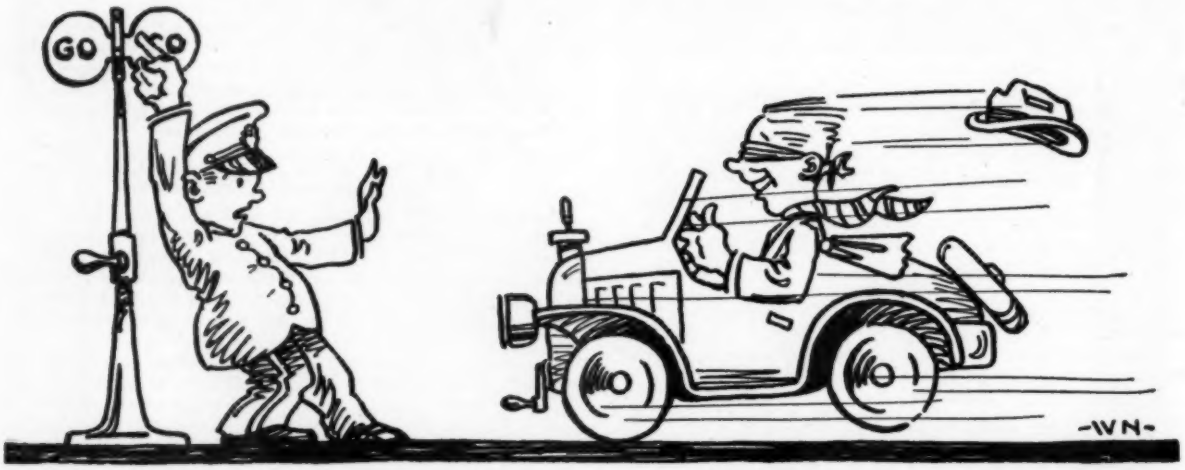
The Ontario Paper Co., Ltd., a subsidiary of the Chicago Daily Tribune, has filed a complaint with the Interstate Commerce Commission, Washington, against the Canadian National Railway, Grand Trunk Western Railway, Detroit, Grand Haven & Milwaukee Railway and Milwaukee Car Ferry Co., and the Chicago & Northwestern Railway, alleging that the railroads maintained unjust, unreasonable and excessive rates on newsprint shipped from the company's mill at Thorold to Chicago, and demanding reparation from the roads for injury of over $80,000.

J. Miln, formerly assistant superintendent of the F. N. Burt Co., has joined the sales staff of Sears Co., Canada, Ltd.

A permit has been issued in Fort William to the Fort William Paper Co. for the construction of a new sulphite mill which will cost $300,000. The work which is in progress at the present time, includes a digester building, 72 by 80 feet, an acid plant 48 by 36, a chipper building 56 by 32, a boiler house 56 by 64, and a 22 by 68 addition to the barker building. The materials being used in the construction are concrete, steel and brick.

The Sealright Company, manufacturers of bottle caps and liquid-tight paper cans, Fulton, N. Y., are establishing a branch in Peterboro, where they are taking over part of the plant of the Nashua Paper Co., Ltd. R. A. Brown, manager of the latter company, is responsible for inducing the new industry to move to Canada, and he will be secretary-treasurer of the Canadian company. While officers of the Nashua Paper Co. will be in charge of the executive management and sales of the Sealright Company in Canada, the affairs of the two concerns will be handled separately.

The Reliable Paper Box Co., which was recently organized in Toronto, has been granted an Ontario charter with capital



RIDING ALONG BLINDLY IS RISKY BUSINESS

And yet there are certain people who take greater chances than the one pictured above. Take for instance the paper mill owner, the converter, or the paper dealer who use obsolete and inefficient machinery in the manufacture of rolls of paper. They all are in a position to lose a volume of business, which due to past experience had been considered certain.

And not only is there a chance that old customers will trade with a competitor who is equipped to produce rolls of superior quality, but also the fact must be faced that to attract new buyers, the best is none too good.

Why be content to ride along with second rate equipment when there is a CAMACHINE for every roll requirement? With a CAMACHINE you will get better rolls, greater production and at lower cost.

Let us mail you information on a CAMACHINE suited to your work.

CAMERON MACHINE CO.

61 POPLAR STREET,

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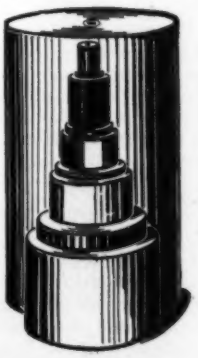


SLITTERS AND WINDERS FOR EVERY ROLL REQUIREMENT

stock divided into 200 preference shares of $100 each and 200 common shares. The company has started its business in the Hermant Building, and will manufacture solid boxes.

Ontario has been remarkably free from forest fires this year, but owing to the hot, dry weather of late several fires broke out in the Nipigon district, which were speedily extinguished by the rangers and through the good work of the aerial patrol service. The aerial equipment which was started by Hon. James Lyons a few years ago, in the face of considerable opposition, has proved its worth and effectiveness.

MANITOBA

Hilton & Sons, Ltd., Wall street, has completed plans and will proceed immediately with the construction of a new plant in Winnipeg for the manufacture of corrugated paper boxes and containers. It will be one story, 200 by 200 feet, reported to cost in excess of $75,000 with equipment, list of which will soon be arranged. A general contract for erection has been let to John Gunn & Sons, Winnipeg.

The first shipment of paper from the Manitoba Pulp & Paper Co.'s mill at Pine Falls is expected to be made early in December, the building program having been carried out quite up to schedule. Work is also being pushed in connection with the town site at Pine Falls. Some forty houses of the two-story bungalow type are being constructed for the employees. These will be modern dwellings, the company undertaking to supply power and light.

BRITISH COLUMBIA

The earnings of the British Columbia Pulp & Paper Co., Vancouver, are reported to be very satisfactory. The working capital position has been improved since the organization of the company some months ago, and the volume of business done has been well in line with the forecasts made last November by those connected with the undertaking. The company is carrying out chemical research work in connection with the utilization of hemlock in the production of cellulose, and President Killam declared that if it proves successful the company will treble the size of its plant..

Apparatus to determine the humidity of the atmosphere has been received by Ed. Walmsley, crown timber agent, New Westminster, who has set it up in the Federal Building in New Westminster. The apparatus is used by most of the large logging concerns on the coast to ascertain when the danger mark has been reached as regards forest fires. The instrument will keep Mr. Walmsley posted as to the humidity, and he in turn will broadcast the results to logging concerns not equipped in this way.

Seven men were injured, two of them seriously, when a dryer recently exploded in the plant of the Pacific Mills Limited, Ocean Falls. The dryer part of the machine was almost completely wrecked and all the glass in the building was broken. Several pieces of the machine were hurled through the roof.

Establishment in Vancouver of an industry that will turn out the first year roughly $500,000 worth of corrugated paper products, including boxes and wrappers, was announced recently. The city has agreed to lease two lots in the False Creek Industrial Area to V. T. Walsh, of London, Ont., for this purpose. Investment in the plant and building amount to $65,000 or $75,000, and about thirty men will be given steady employment in the initial stages. Pulp and paper from the British Columbia mills will be used.

The Canadian Scottish Paper Co., Ltd., of New Westminster, has started the production of coated papers and box board in its new plant erected and installed at a cost of $100,000. This is the only paper coating plant in Canada west of Toronto. The initial output is 75 tons per month, but will be increased in the near future. The equipment for this mill was purchased from American Coating Paper Mills, Elkhart, Ind., through Gibbs-Brower Co., Inc., New York City.

NEW BRUNSWICK

Work Started on Grand Falls Power Development

International Paper Company, through its subsidiary, the St. John River Power Company, has started work on a hydro-electric installation with an initial capacity of 60,000 horsepower, at Grand Falls. Construction will comprise a dam above the falls, a tunnel under the town and a power house below the falls. In co-operation with the Fraser Companies, Limited, a storage reservoir will be constructed on the Madawaska River, a large tributary of the St. John.

The official opening ceremony took place on August 10th when Premier J. B. M. Baxter of New Brunswick fired off the first charge of dynamite in presence of practically the whole population of the town of Grand Falls and of some 500 visitors.

Five political entities are involved in the development because of the fact that the St. John River in Maine forms part of the United States-Canadian border and flows through the Maritime Provinces into the Bay of Fundy. The United States, Canada, the State of Maine, and the Provinces of Quebec and New Brunswick are all interested in this development. Part of the power is reserved for general industrial requirements of the Province of New Brunswick the remainder will be used to operate newsprint mills to be built by the Fraser Companies and by International Paper.

The contract for a supply of power has been signed between the St. John River Power Co. and the Fraser Companies, which are to construct a newsprint mill at Campbellton.

Before the Royal Commission which inquired into the grievances of the Maritime Provinces, representatives of the lumber and pulp and paper interests of the province asked for lower freight rates and reciprocity with the United States in wood products as a remedy for industrial depression in the maritimes. The demands were placed before the commission at a sitting at St. John, by Angus McLean and G. P. Ruickbie, representing the Bathurst Lumber Co.; C. M. Matheson, of Fraser Companies, and Hon. J. L. O'Brien, speaker of the New Brunswick Legislature, and a summing up by J. D. McKenna.

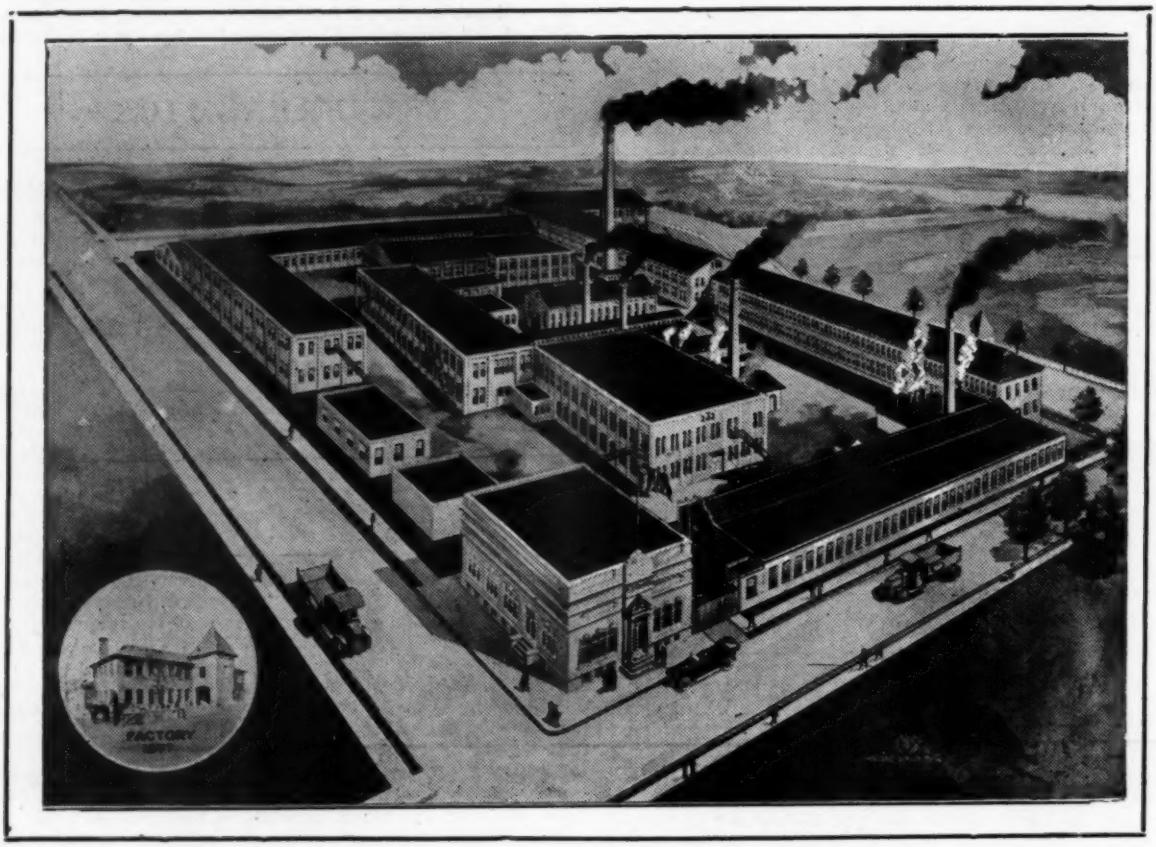
Hon. J. K. Flemming, of Juniper, N. B., a former premier of the province, and recently elected president of the N. B. Pulpwood Association, has been renominated as the candidate of the Conservative party in the forthcoming federal election for the Carlton-Victoria division.

Canadian International Paper Company has purchased timber limits aggregating 490 square miles from the Chaleurs Bay Mills Company. These woodlands are on the Restigouche River above Campbellton, and will form a reserve for the newsprint mill which International Paper intends to build in the vicinity, and which will be operated by means of the power new being harnessed at Grand Falls.

NOVA SCOTIA

Control of Cosmos Imperial Mills Passes to Canada

The paper industry is interested in the announcement that the Cosmos Imperial Mills, Limited, with plants at Yarmouth, N. S., and at Hamilton, Ont., has passed from American to Canadian control. The mills manufacture special products such as the heavier grades of cotton duck, used for paper drier felts, mechanical belting, hose, binder canvasses, car



This Illustration Visualizes Forty-six Years of Progressive Growth and Unsurpassed Achievements in the Production of

EASTWOOD

FOURDRINIER-CYLINDER-WASHER

WIRES

EASTWOOD WIRE MANUFACTURING CO., BELLEVILLE N.J. U.S.A.

tops, etc. These products are sold mainly on contracts to large consumers such as railways, paper mills, etc. The development of the newsprint industry has been a big factor in the company's expanding business.

An issue of $1,500,000 seven per cent, cumulative preference shares has been successfully offered.

Representatives of the Scott Paper Co., of Chester, Pa., have made surveys of four different sites for a pulp and paper mill in Nova Scotia. The sites are at Liverpool, Hantsport, New Glasgow and Windsor. According to A. W. Broughton, manager of the company's mill at Caledonia, which was recently burned down, the mill will not be rebuilt at Caledonia. The plans of the company now are to build a combined pulp and paper mill, the latter to consume about one-third of the pulp produced, and to buy in the open market the 15,000 cords of pulpwood required per annum.

WISCONSIN NEWS

Contracts have been let by the Marinette and Menominee Paper Company, subsidiary of the Continental Paper and Bag Mills Corporation, New York, for new boiler equipment in the company's Menominee plant. The work is expected to be completed in about three months. The boiler house will be made large enough to fit the general program of enlargements now being carried out by the company. A few more weeks will see the completion of the new screen room of the Park mills plant in Marinette, as a result of which the company will be able to turn out a higher grade product. Changes are also being made in the acid system of both plants.

A Neenah paper manufacturer has been raised to the highest rank that can be attained by a Catholic layman. F. J. Sensenbrenner, vice president and general manager of the Kimberly-Clark Company, of that city, has been designated by Pope Pius as a Knight of St. Gregory. He will be vested with this rank by the Rt. Rev. Paul Rhode, bishop of the Green Bay diocese, shortly.

A small fire occurred last week at the plant of the John Strange Paper Company at Menasha, resulting in a temporary shutdown and slight damage. The fire started from a stack of wood cores.

George W. Mead, president of the Consolidated Water Power and Paper Company, Wisconsin Rapids, has purchased the T. E. Nash home in that city. The purchase was made for Mr. Mead's son Stanton, whose marriage to Miss Dorothy Williams, daughter of Mr. and Mrs. Burt Williams, Milwaukee, occurred recently. The house was built in 1901 by the late T. E. Nash, railroad builder and pioneer in paper manufacture in Wisconsin, and was the finest residence in Wisconsin Rapids for 25 years. Upon his death ten years ago, it passed into the hands of his widow who, however, died just a few weeks ago.

Obtains Permit to Develop Power Sites

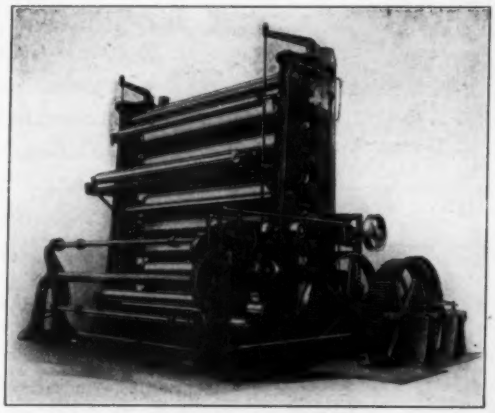
Following a hearing before the Wisconsin Railroad Commission, the Northern Paper Mills, of Green Bay, obtained a permit to develop two water power sites on the Menominee River at White Rapids, from which power will be transmitted to its paper mill in Green Bay.

The power sites were then sold to the Northern Electric Company, a newly formed corporation headed by practically the same officials as the Northern Paper Mills. Judson G. Rosebush, Appleton, is president of both concerns. Financing of the huge development project will be accomplished partly through a bond issue.

Both power houses will be built on the Michigan side of the river, and the state of Wisconsin will thus lose the benefit of the taxes on this valuable property. One of the plants will supply power for the Northern Paper Mills, while the other will supply the Milwaukee Electric Railway and Light Company, a subsidiary of the North American Company. One-

Norwood Water Filters

Low water periods hold no worries for the mills equipped with Norwood Filters, for they know that all dirt, leaves and other foreign matter will be perfectly filtered out. Only clean water enters into the making of the paper, resulting in a uniform quality. Machines are not plugged up or damaged—continuous operation is possible. Norwood Water Filters have many advantages and exclusive features. Catalogs on request.



Norwood Calenders

Norwood Calenders are built for efficient, easy and speedy operation. For quality work and low maintenance cost they are unsurpassed. Continuous oiling system, top and bottom boxes removable without taking cap off calender frame and many other features. Full specifications on request.

NORWOOD ENGINEERING COMPANY
Florence, Mass.

FILTERS, SUPER CALENDERS, GLASSINE CALENDERS, PLATERS, DUSTERS, BRUSHING ENGINES

GERRARD
The Tie That Binds

Who'll be first—you or your customer?

Don't wait to have a customer say, "Ship my paper on skids by the Gerrard method." Consumers of paper are quick to realize the many advantages of the Gerrard method as applied to skid paper and will ask that their shipments be made in this way. Don't let them come to you with this new method of packing—be in a position to offer it yourself, thus creating good will and business friendship.

The savings effected by the Gerrard method have become phenomenal. One manufacturer estimates a saving of $75,000.00 yearly. The average cost for packing by this method has reduced the cost of shipping flat stock to $2.50 per ton! This means a saving of 75% in packing cost, to say nothing of the elimination of damage; easy loading, unloading and better customer relations.

The Gerrard Model "G" Little Giant machine is used in applying 3 gauge wire to paper on skids, stowing cars of roll paper and re-enforcing case paper. It's the busiest machine in every paper mill in which it is installed—an important link in the Gerrard method of packing and shipping paper. Equip your mill with the Gerrard method!

We know of many instances where customers have asked shippers to use this method. Don't let them beat you to it. Let us put a Gerrard Engineer on the job. A card will bring him.

GERRARD WIRE TYING MACHINES CO.
1939 South 52nd Avenue :: :: CHICAGO, ILL.

half of the tower line from Amberg to Green Bay has been leased to the Wisconsin Gas and Electric Company, also a subsidiary of the North American Company.

The American Paper Company, of Milwaukee, has filed articles of incorporation with the secretary of state. There are 100 shares of common stock at $100 each and 250 shares of preferred stock at $100 each.

Appleton, the paper center of the Fox River Valley, will this year entertain the Fox River Valley Safety Conference which was organized last year and held its first meeting in Green Bay. Appleton paper manufacturers are busily engaged in making the necessary arrangements to entertain the delegates, of which there will be upwards of 600. The conference will take place Sept. 29.

Increased fire protection will be made possible at the Biron plant of the Consolidated Water, Power and Paper Company, Wisconsin Rapids, by the construction of a new elevated water tank. It will have a capacity of 50,000 gallons, and will be 136 feet high.

The Appleton Coated Paper Company, of Appleton, has filed an amendment to its articles of incorporation increasing its capital stock from $600,000 to $1,250,000.

The Little Rapids Pulp and Paper Company, of Little Rapids, has installed an automatic sprinkler system in its plant, thereby adding to its fire protection.

Approximately 900 tons of pulp arrived recently at Ashland by boat from Nipigon for reshipment by rail to Fox River Valley mills. The equipment for unloading was furnished by the Consolidated Water Power & Paper Company.

Work on the turning basin and the deepening of the channel of the Fox River at Green Bay and DePere will probably be completed by the midddle of September. The project will enable large boats to ply up the river from Green Bay to DePere.

The Little Kaukauna government dam at Little Rapids is nearing completion. A crew of 60 workmen is employed on the project. The dam will be nearly 590 feet long and will be equipped with eight flood gates.

An old boiler house at the Wisconsin Rapids plant of the Consolidated Water Power and Paper Company has been dismantled and a new boiler house is being erected in its place. Eight new boilers will be installed in it. This is a part of the reconstruction and replacement program now being carried out by the company.

Wisconsin ranks fourth among paper mill states, produces $90,000,000 in paper products annually, and pays $25,000,000 in wages to 18,000 employees in paper mills. These were facts brought out in a talk delivered before the Appleton Lions Club by R. M. Radsch, superintendent of the Thilmany Pulp and Paper Company, Kaukauna.

Claims of preferred stockholders of the Peshtigo Paper Company, Peshtigo, in the sum of $259,189.40 were disallowed by Judge William B. Quinlan in the circuit court of Marinette County last month. The court held that a constructive fraud would be perpetrated if the stockholders were allowed to participate in funds in the hands of the receiver on a par with general creditors of the company.

Among the accidents in Wisconsin paper mills last month were: Fred Peters, Atlas mill of the Kimberly-Clark Company, Appleton, sprained and bruised back and hip, caused by being caught beneath a pile of falling pulpwood; Homer LeTour, foreman of the Esco Paper Company, Peshtigo, severe injury to his eye, caused when particle of steel penetrated the eyeball; Emil Wegenke, Fox River Paper Company, Appleton, instantly killed when a charge of electricity passed through his body; John L. Jabas, chief engineer of

STEEL

for Immediate Shipment from Stock

For Maintenance, Construction and Repairs

Bars	Boiler Tubes
Shapes	Boiler Fittings
Structurals	Corrugated Sheets
Rails	Concrete Reinforcing
Plates	Welding Rods
Sheets	Babbitt Metal
Rivets	Tool Steel
Bolts	Bar Iron
Nails	Refined Iron
Wire	Floor Plates
Chain	Safety Treads
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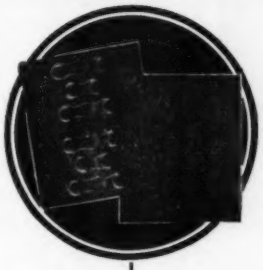
Write for the Ryerson Journal and Stock List —the "Key" to Immediate Steel

JOSEPH T. RYERSON & SON INC

CHICAGO ST. LOUIS CINCINNATI DETROIT BUFFALO NEW YORK

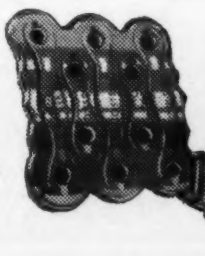


Joined Once

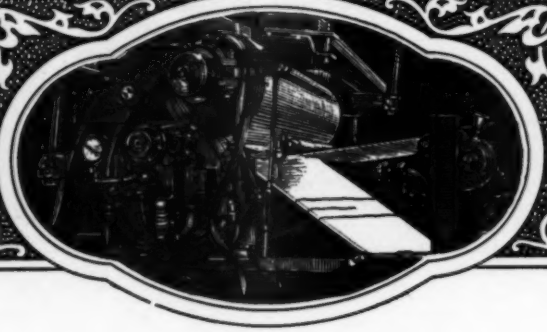
for the life of the belt

Crescent Belt Fasteners make a permanent joining which will 'stay put' for the life of the belt. No holes are punched in the belt. The prongs of Crescent Rivets find their way through the belt without cutting or injuring the power-carrying lengthwise fibres. The belt ends are forced tightly together and compressed which eliminates raveling and fraying. No parts subject to wear. Write for the Story of Proper Belt Joining. Crescent Belt Fastener Co., 247 Park Ave., New York, N. Y.

Write for Catalogue



CRESCENT BELT FASTENERS



Felts that give you a lower cost of production

One of the biggest factors in the cost of making paper is the overhead. In that item you figure steam, paper broke, and interest on your investment.

Hamilton Felts can help you reduce that overhead.

Hamilton Felts have that rare faculty of taking out water in more than usual amounts before the sheet reaches the dryers. This saves steam. It is a known fact that it costs only a tenth as much to take out water by means of felt as to sweat it out with steam.

Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

Moreover, by taking out water with the felt, you deliver a stronger sheet to the dryers. This eliminates broke, down time, and increases production.

It likewise reduces the amount of seconds and worthless paper which must be sold to the scrapman. Hamilton Felts help you get full price for every pound of paper you produce.

Why not talk it over with a Hamilton Felt man? His experience is at your disposal in giving you that felt which best fits your individual needs. And once you use a Hamilton Felt you'll continue to use them—they *are* better.

SHULER & BENNINGHOFEN, Hamilton, Ohio

THE MIAMI WOOLEN MILLS **Founded 1858**

Hamilton Felts

Mill No. 3, Fox River Paper Company, injuries to his hand as a result of placing it in the crosshead and frame of an engine in which the air compressor had been broken.

Power companies and paper mills on the Wisconsin River paid tolls in the sum of $35,595 to the Wisconsin Valley Improvement Company to cover power service for the last six months. This is the money due from all who develop power through the use of dams on this river. The tolls have been approved by the Wisconsin Railroad Commission which fixes the amount so that the company may earn six per cent interest on the investment. Among those paying toll are Rhinelander Paper Co., Rhinelander; Tomahawk Pulp and Paper Co., Tomahawk; Tomahawk Kraft Paper Co., Tomahawk; Grandfather Falls Paper Co., Merrill; Wausau Paper Mills Co., Brokaw; Marathon Paper Mills Co., Rothschild; Wausau Sulphate Fibre Co., Mosinee; Consolidated Water Power and Paper Co., Wisconsin Rapids; Whiting-Plover Paper Co., Stevens Point; Nekoosa-Edwards Paper Co., Nekoosa and Port Edwards.

Plans are in progress whereby the Valley Paper Mills will become the owner of the plant of the defunct Island Paper Company, of Menasha. The plant was ordered to be sold at public auction. The Valley Paper Mills was organized about five years ago. Although the foundation was built, difficulty in financing prevented the completion of the structure. The company was recently reorganized, and all indications point to the purchase and operation of the Island Paper Company plant by the Valley Paper Mills.

Raymond Kelly Resigns from Kimberly-Clark

Raymond Kelly, general sales manager of Kimberly-Clark Company and vice-president of Cellucotton Products Company, Neenah, Wisconsin, announces his resignation from both offices, effective at once.

Mr. Kelly has been associated with Kimberly-Clark Company for eleven years and for the past six and one half years has been general sales manager. He has been vice-president of Cellucotton Products Company since the formation of that company in 1920.

Mr. Kelly has not announced his future business plans and for a short time will continue his residence in Neenah.

Approximately 800 persons attended the annual picnic for employees of the Interlake Pulp and Paper Company, at Appleton, a few weeks ago. A baseball game was played between the Appleton mill team and a team of the Wisconsin Rapids mill of the Consolidated Water Power and Paper Company, a picnic dinner was served, and a band concert, races and contests furnished additional amusement.

John Ward, formerly of Stevens Point, who had spent most of his life in paper making, died last month in Chicago. He was buried in his former city, Stevens Point.

The following paper mills and associated industries exhibited their products in the Wisconsin Products Exposition at the Wisconsin State Fair recently: Appleton Coated Paper Company, Tuttle Press Company, Fox River Paper Company, J. J. Plank and Company, Wisconsin Wire Works, Valley Iron Works, Appleton Woolen Mills, Thilmany Pulp and Paper Company, Kimberly-Clark Company, Patten Paper Company, Riverside Fibre and Paper Company.

Maynard LaBrot, son of Fred C. LaBrot, manager of the Stevens Point plant of the Consolidated Water Power and Paper Company, is in a serious condition at a River Falls hospital, and a Stevens Point physician and his son were instantly killed when the physician's car plunged off a bridge into a creek near River Falls, Aug. 30. The automobile landed bottom side up and pinned the victims underneath.

Harry Price and A. K. Kimberly, of the Kimberly-Clark Company, Neenah, have purchased a tract of land on the Upper Wolf River for the establishment of sportsmen's resort.

Oakite Service Men, cleaning specialists, are located at

Albany
Allentown, Pa.
*Atlanta, Ga.
Baltimore
*Boston
Bridgeport
*Brooklyn
Buffalo
Camden
Charlotte, N. C.
*Chicago
*Cincinnati
*Cleveland
*Columbus, O.
*Dallas
*Davenport
*Dayton
*Denver
*Des Moines
*Detroit
Erie
Flint, Mich.
*Grand Rapids
Harrisburg
Hartford
*Indianapolis
Jacksonville, Fla.
*Kansas City
*Los Angeles
Louisville, Ky.
*Milwaukee
*Minneapolis
*Montreal
Newark
Newburgh, N.Y.
New Haven
*New York
*Oakland, Cal.
Philadelphia
*Pittsburgh
Portland, Me.
*Portland, Ore.
Providence
Reading
*Rochester
Rockford
Rock Island
*San Francisco
*Seattle
*St. Louis
Springfield, Ill.
Syracuse
*Toledo
*Toronto
*Tulsa, Okla.
Utica
*Vancouver, B. C.
Williamsport, Pa.
Worcester

*Stocks of Oakite materials are carried in these cities.

Oakite reduces felt cleaning costs

In paper mills today, handling costs are being materially reduced through the wider use of power driven equipment. So, too, are operating and manufacturing economies being affected in adopting the Oakite way of washing felts.

For example, mill superintendents have found that Oakite washes felts more thoroughly, quickly and better than anything else they have used. And best of all, it not only costs less, but there are many instances where the life of the felt has been materially lengthened.

There are other uses for Oakite such as cleaning dandy rolls, Fourdrinier wires, screen plates, sieve cloths, etc., grinding cylinder rolls, each of which brings some worth while economy. Find out how much you can save by asking our service man in your locality to call. No obligation, of course.

OAKITE

TRADE MARK REG. U.S. PAT. OFF.

Industrial Cleaning Materials and Methods

OAKITE IS MANUFACTURED BY OAKITE PRODUCTS, INC.
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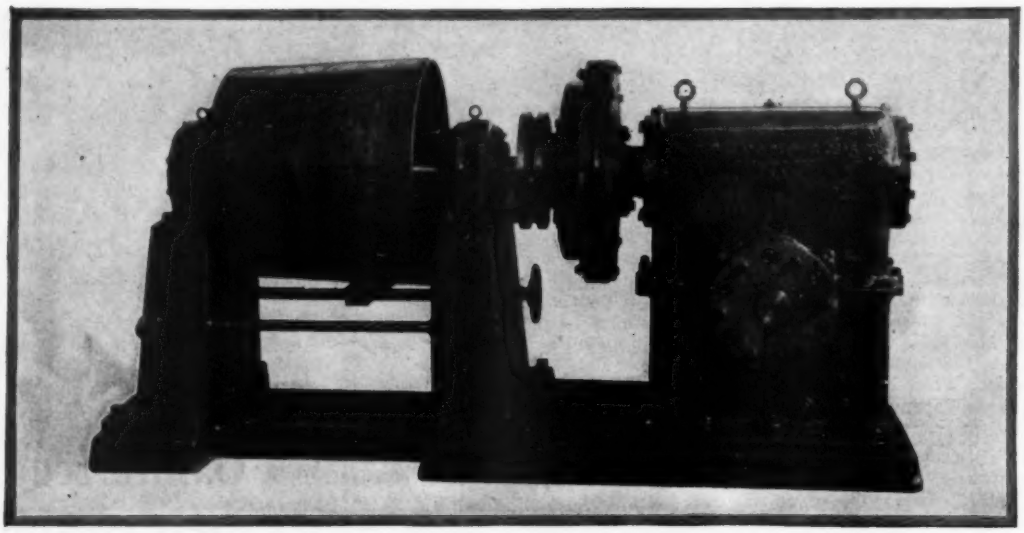

Cleveland Worm Gear Section Drive installed on an old machine at the Paul A. Sorg Paper Co., Middletown, Ohio.

Compare This Section Drive With Open Gears

Cleveland
CWGC
WORM GEAR
REDUCTION UNITS

Standard Cleveland units are manufactured in capacities ranging from ½ to 150 horsepower and in a great variety of speed reduction ratios. They have proved successful for all sorts and sizes of paper mill machinery.

The paper machine section drive shown in the above picture is being eagerly adopted by paper manufacturers throughout the country. At a comparatively small cost it reduces maintenance charges greatly and eliminates production delays. In addition, it provides an efficient, clean, self-lubricated and easy-running drive.

The heart of the drive in the Cleveland Worm Gear Reduction Unit—the first worm gear drive to meet completely the requirements of paper machine operation. Cleveland worm gears have been tested through years of actual paper machine service and are now installed in the drives of thirty-seven machines with complete satisfaction.

In a Cleveland drive you not only get the best of worm gear equipment but its successful performance is also insured by our years of experience in this field. The drive can be installed on a single section or an entire machine with equal facility.

We can furnish a complete drive with pulley and magnetic clutch, as shown above, or a standard reduction unit alone, to be incorporated in the drive by your machine builder or engineers.

CLEVELAND WORM & GEAR COMPANY

3270 EAST 80th STREET CLEVELAND, OHIO

NEW ENGLAND NEWS

Current Situation and A. W. P. Co. Progress

The fall is ushered in with encouraging reports from paper mill centers of the six northeastern states. Activity in the newsprint industry continues at a capacity rate; the board industry of New England continues to maintain five-day week operations with no important periodical shutdown; the book paper industry is operating between 80 and 90 per cent, based on traffic statistics and only the fine paper belt of western Massachusetts will fall below this average with three-day operations in Holyoke—not an unusual situation with many mills, according to the Massachusetts Department of Labor and Industries.

Nevertheless the fine paper trade is making encouraging progress. Many of the independent mills are operating from 80 to 90 percent, and Mr. Willson of the American Writing Paper Co., who is conservative in all his statements, is decidedly optimistic at the improvement in the business of the Big Company.

Speaking before the Rotary Club, of Holyoke, Mr. Willson declared that the A. W. P. Co., had been re-incarnated in 1926 with its future before it. Before January 1st, he told the Rotarians he expected to have the financial reorganization completed with steps well under way to disposing of the mills that are scheduled for sale.

Reviewing conditions since the receivership in 1923, he stated that the management started at that time with no cash assets, with no power to borrow money, and with the usual handicaps incidental to receivership, and had come through the trying periods since without borrowing except on certificates to cover local Holyoke taxes and Government taxes on income from two to five years prior to the receivership.

He divulged for the first time the fact that just prior to the receivership he learned that the company had no funds to meet a weekly payroll. This was a critical period. The necessary amount was not forthcoming from the banks due to the action of a stockholder who had brought suit to liquidate and had acquired a few shares for that purpose a few days previous. Under that condition the banks applied all A. W. P. Co. cash on hand against bank loans. The question whether liquidation or receivership would ensue hung in the balance, but finally the money was forthcoming and the situation was saved.

Mr. Willson believes it was well for Holyoke that the receivership was adopted. He outlined the importance of the company to the city, and to the industry. It daily ships ten full cars of fine papers to all parts of the country and receives five times that quantity of raw materials.

From 80 to 25 per Cent of Country's Business

One of the most interesting facts brought out by Mr. Willson was the tremendous relative decline in the consumption of rag content papers.

"Twenty five years ago," he said, "the A. W. P. Co. had 80 per cent of the high grade tonnage in the United States, it now has about 24 to 30 per cent. The difference does not represent that much lost tonnage, but by the great increase in the production and consumption of cheap writing papers. Only fifteen years ago, 75 per cent of the high grade papers were based on rag pulp; today 52 per cent of the same papers are made from wood fibres and the balance from rags."

Clark and Hatch Purchase Fine Writing Mill

Two energetic paper markets whose knowledge of the industry was gained in the Holyoke district, have joined forces to purchase one of the oldest paper mills in the country, the East Hartford Manufacturing Co., of Burnside, near Hartford, Conn. The two men are R. S. Hatch, well known paper chemist of Dayton, Ohio, formerly of the Paper Products Co., of Holyoke, also former president of the Technical Association of the Pulp and Paper Industry, and Fred C. Clark, formerly secretary of the Hawthorne Paper Co., Kalamazoo,

ROOTS

BLOWERS
for CONVEYING

Roots Blowers are ideal for pneumatic conveying of rags, wood chips, or any loose material.

There are many installations that are giving uninterrupted service at surprisingly low cost for power and for maintenance.

Ask us for complete information

"Standard Since 1859"

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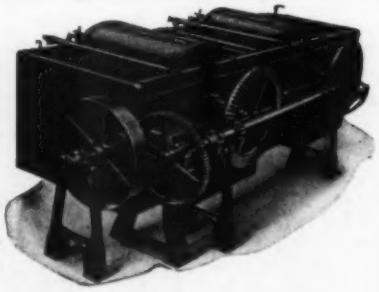


Bleached Sulphite Washer

TWO A. D. WOOD CYLINDER TYPE

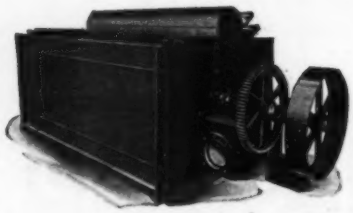
A high efficiency machine handling large capacity with low power and minimum upkeep.

Absence of couch or doctor and continuous self cleaning wire are important features in handling stock containing bleach liquor.

Simply and strongly constructed.

Our new collars ABSOLUTELY ELIMINATE losses by sealing straps. Furnished at nominal cost.

SEND YOUR ORDER AND GET THE BEST

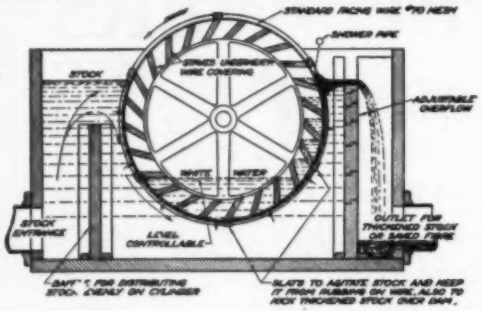


Decker and Decker Washer

We make many styles which are designed for various mill conditions and from an operating standpoint.

Our name on these machines gives you the assurance of many years of satisfactory performance.

The Walker Attachment is applicable to any model or to your present decker. It will increase their capacity 33% at negligible cost.



A. D. Wood Save-all

The A. D. Wood Machine as a Save-all is unique.

New sealing collars and ease of patching the wire mean maximum efficiency.

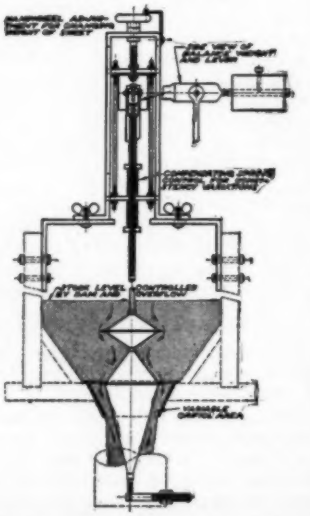
Simplicity, self-cleaning wire and continuous high capacity give satisfaction and greater savings.

We have reports of 90-95% efficiency for a four year period

Boivin Weight Regulator

FOR FOURDRINIER MACHINES

More than 50 already giving invaluable service on fast and slow speed machines, handling all kinds of stock. Install it, adjust to give desired weight, and leave it alone. Overweight claims eliminated, with big improvement in broke loss and running conditions. Handles capacities ranging from 15 to 150 tons with equal efficiency. Sensitive action and direct control.



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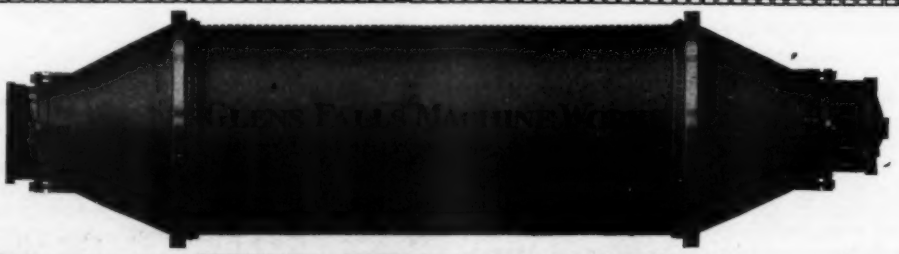


SERVICE - EFFICIENCY - QUALITY

See pages 344-345 in the 1928 Paper and Pulp Mill Catalogue

Mich., at one time head of the paper division of the Bureau of Standards, Washington, D. C., and previous to that with the American Writing Paper Co., Holyoke.

The East Hartford Manufacturing Co. dates back to Revolutionary War days when it was established to supply paper for the Connecticut Courant, predecessor of the Hartford Courant. It has changed ownership many times but has been operated continuously as the East Hartford Manufacturing Co. since 1865.

L. S. Forbes, former owner, sold the mill to Messrs. Clark and Hatch through the offices of the Gibbs-Brower Co., pulp and paper mill brokers, of New York City. The report is that the company will continue under its old name and manufacture high grade bond papers for which the plant is well equipped. Its Charter Oak bond and ledger papers enjoyed an excellent reputation for quality in the past.

Two More on Powdered Coal

Two more New England paper mills have joined the increasing number in the ranks of the powdered coal burners. One of the power units of the American Writing Paper Co. is to have such an installation in the near future and the Cushnoc Paper Co., of Augusta, Me., will also install one, if present plans materialize. The type to be selected has not been announced. Other New England paper mills who have adopted this method of power plant firing are the two mills of the Pejepscot Paper Co., who were the pioneers, the Fitchburg Paper Co., the Nashua River Paper Co., and the Forbes Lithograph Co.

First receipts of paper board from the Tidewater Paper Board Co., of Norwich, Conn., under its new management have come to hand in Boston and are described as of very good quality. One machine only is operating. The company is reported to have made a contract with the City of Norwich by which it will secure its water supply from the city's mains. This will eliminate the disadvantage of taking water from the ocean which has been a distinct handicap in the past, for the saline compounds resulting from the use of salt water are said to render the board unfit for use as containers of hardware, as it is apt to cause tarnish.

The L. L. Brown Paper Co., of Adams, Mass., against whom a suit for infringement of the Byron Weston patent on "hinge" loose leaf ledger paper is pending in the Federal Court at Boston, have recently taken out new patents covering the manufacture of hinge paper by a new process distinct from the suction or blast method of removing some of the pulp from one edge of the sheet as it passes over the machine, or from the method of applying abrasives to the finished paper. Their method is described in the patent as the skilful regulation of the flow of the pulp. It is the suction and blast methods which are involved in the suit.

An exodus of French Canadians to their home lands in the Province of Quebec is described as one of the embarrassing factors to the paper industry of northern New England this year. Good wages and an equal demand for labor has enticed them back. The Great Northern Paper Co. describes this condition as serious and it has apparently caused this company no end of trouble. It has interfered with their log drives, with the peeling of 20,000 cords of pulpwood, the construction of 11 miles of logging railroad and roadbuilding. Moreover, the coming of the forest fire season necessitated the taking of men from many of these jobs to fight the fire demon so that projects expected to be finished by September 1, will probably not be completed this year.

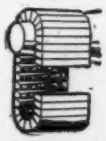
The Vermont Publishers Association were the guests of a group of paper manufacturers and merchants at their annual outing at Newport, Vt., from August 27 to 29. On the evening of the 28th, a dinner and entertainment was provided by Tileston Hollingsworth Co., the International Paper Co., Storrs Bement & Co., Carter Rice & Co. Corp., and John Carter & Co.

The resignation of Herman Harrigan, chief engineer of the American Writing Paper Co., has been announced by President Willson. Prior to his resignation, Mr. Harriman was with the

Opening the Lap to Full Width

This is economical

There is more than one way of buying the things you need for your plant. Standardize on Duxbak Leather Belting and you can save enough to buy a much needed piece of equipment. Let us tell you about some paper mill drives where Duxbak is saving money. If you use leather belts send for our free booklet, "There's Money in This for You." It tells you how to repair belts and to make them endless.



Schieren All-Leather Transformer Belts

The tapered blocks on Schieren All-Leather Transformers or speed change belts do not warp, crack or split because they are made of the best leather. That's why they last much longer than belts made with wooden blocks.

DUXBAK BELTING

Chas. A. Schieren Company

Tanners
Belt Manufacturers
37 Ferry Street, New York

"SCHIEREN BELTS DO LAST LONGER"

Simplicity of Hytor construction assures trouble-free performance

Nash Hytor Vacuum Pump for suction roll service at the Mead Pulp and Paper Co., Chillicothe, O.

Free from pistons, connecting rods, cams, valves and other complicated parts likely to get out of order, the Nash Hytor Vacuum Pump can always be depended on for trouble-free performance in removing condensation and air from dryers, flat boxes, suction rolls and similar equipment.

It is the logical choice in mills where never-failing service is of first importance. Bulletin on request.

NASH ENGINEERING COMPANY

So. Norwalk Connecticut

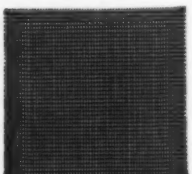
New England Representative
Mr. G. H. Gleason, Nottingham Bldg., Copley Sq., Boston, Mass.

Western Representative
Mr. T. H. Savery, Jr., Room 1524 Republic Bldg., Chicago, Ill.

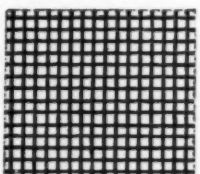
Nash Hytor

VACUUM PUMPS AND COMPRESSORS

FOURDRINIER WIRES



In Brass, Bronze and phosphor bronze, widths up to, and including 250 inches.



Also

CYLINDER FACES
WASHER WIRES
and CORDUROY CLOTH

THE
W. S. TYLER COMPANY
Cleveland, Ohio, U. S. A.

District of Columbia Paper Co., and he leaves the American to return to that company in a less onerous position but in an executive capacity. Mr. Willson speaks most highly of Mr. Harrigan and his services to the company, calling him an indefatigable worker and deeply interested in the company's many engineering problems.

The International Paper Co. contemplates the erection of a library and recreational hall in Livermore Falls, Me., for the employees of its big mills there.

Fires Destroy Stock

Two fires did considerable damage to waste paper stocks in New England this past month. The first was in the warehouse of the DeVito Co., one of the Hub's largest paper stock firms, destroying upwards of $30,000 worth of waste paper, while the second did damage estimated at nearly $100,000 when it destroyed a warehouse of the Haverhill, Mass., division of the Robert Gair Co., causing a loss of nearly 1000 tons of folded news and some sulphite pulp. The latter company immediately ordered its supply dealers to withhold further shipments pending use of as much of the water damaged paper as was practicable.

A letter has been sent to stockholders of the Cushnoc Paper Co., Augusta, Me., which has recently been in bankruptcy, proposing an expenditure of approximately $500,000 for new equipment. This would include a new paper machine with a capacity of 70 tons daily and additions to the power plant.

The St. Croix Paper Co., of Woodland, Me., is providing for more water reserves for the benefit of its paper mill, by the construction of two new dams on the St. Croix River, basin work on which started several weeks ago. One dam will be at the headwaters of the Conoose stream, and one at Goat brook. The work is being done by the St. Croix Water Power Co., which is a New Brunswick subsidiary of the paper company.

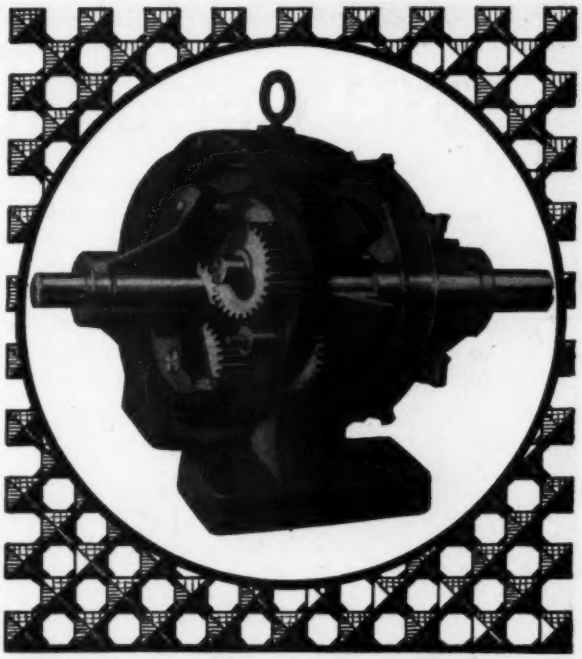
A fire destroyed a large warehouse of the Great Northern Paper Co. at Houlton, Me., recently with a damage estimated at $50,000.

William Whitcomb one of the vice presidents of the Great Northern Paper Co., has returned from a European trip with his wife and family. He arrived in Boston early in September on the Scythia from Liverpool.

The Mountain Mill Co., of Lee, Mass., has been incorporated under Massachusetts laws to take over the business of the Mountain Mill Paper Co., of that city. Louis T. Stevenson, receiver of the latter company has given his assent to the use of the name of the new company for the purpose of acquiring the assets and business of the corporation. The capitalization will consist of $70,000 of preferred stock and $255,000 of common stock. The officers include Louis T. Stevenson, president and treasurer, and Wm. A. Herron, of Stockbridge, clerk.

The strike of employees in the Leominster mill of the George W. Wheelwright Paper Co. has been settled by the efforts of conciliation on the part of the Federal Department of Labor mediators. The employees have returned to work and the point system of measuring employee efficiency is modified and put on trial. It is understood that the demand for a wage increase was withdrawn when it was shown that the modified system would permit of greater earnings by all efficient employees. The strike was in effect for about three weeks. This company produces a high grade patent coated board at the Leominster mill in addition to its line of printing papers. The board has been a successful experiment during the past year and a half, and it is hoped to increase production.

The new automatic box machinery invented by M. B. Claff, a paper box manufacturer, of Brockton, Mass., and produced for him at the plant of the Pneumatic Scale Corporation, at



Somebody Else-not Ganschow

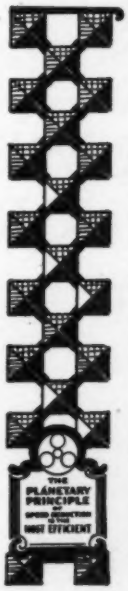
builds speed transformers for buyers of price. Ganschow Products never have been and never will be built just to be "good enough".

BECAUSE

the best materials and engineering skill cost more and that's what you get from Ganschow—Forged Steel Driving Plates—semi-steel housings—gears hardened thru-out and shafts fully ground—driving studs hardened and ground—Hyatt heavy duty roller bearings on high speed end of all drives over 10 H. P.—three internal bearings to take up all weight and torque.

Materials such as these, designed and assembled to give the greatest reduction in the least space over the longest period, are *worth more.*

We repeat. We can't sell at a lower initial cost but we do manufacture speed transformers at a lower year in and year out cost. Catalogue 111 shows you why "there is a difference". Write for your copy.



William Ganschow Company
1015 W. Washington Blvd. Chicago

Plants: CHICAGO and PEORIA

SAN FRANCISCO - - - - The Percy E. Wright Engineering Co. - - - - - - SEATTLE
BIRMINGHAM - C. B. Davis Engineering Co. - SALT LAKE CITY - F. C. Richmond Mchy. Co.
BOSTON - - - - - - - - Allen & Drew - - - - PITTSBURGH - - - - H. S. Stockdale
NEW YORK - - - L. C. Bigiow & Co., Inc. - PHILADELPHIA - - R. E. Spencer Gears
DETROIT - - - - - F. J. Niedermiller

Ganschow
SPEED TRANSFORMERS
CUT GEARS · FABROIL NOISELESS PINIONS

End Corrosion—Once for All

When a paper mill superintendent once tries BITUMASTIC SOLUTION, he is readily convinced that he has found the paint which, once for all, will end his troubles in protecting plant equipment and all other metal surfaces against corrosion. Neither acid, chlorine, heat nor vapor can destroy this coating to attack the metal it protects. It is chemically inert, impervious to moisture, resistant to high temperature and durable beyond compare.

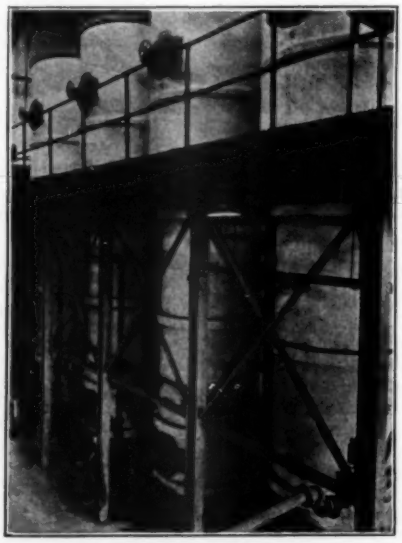
Maintenance costs and depreciation cannot be lowered by a paint which requires renewal every few years or months. BITUMASTIC SOLUTION is a bituminous composition which spreads like ordinary paint yet which, *unlike* all other paints, stands up under the most extreme conditions year after year. One gallon protects 400 square feet. Write for full description, price and names of paper mills which use it.

SINCE **BITUMASTIC** 1854
REG. U.S. PAT. OFF

WAILES DOVE-HERMISTON CORPORATION
17 BATTERY PLACE, NEW YORK
322 S. Delaware Ave., Philadelphia — Union Trust Building, Cleveland
Matson Building, San Francisco
In Canada—Lytle Engineering Co., Montreal
Agents in principal cities

IMPROVED BADGER BLACK LIQUOR EVAPORATORS

Recent Installation
NORTHWEST
PAPER CO.
Cloquet, Minn.



NON-FOAMING

MAXIMUM
STEAM ECONOMY

NO ENTRAINMENT

SODA and
SULPHATE
PROCESSES

E. B. BADGER & SONS CO., Boston, U. S. A.

See page 314 in the 1926 Paper and Pulp Mill Catalogue

Norfolk Downs, Mass., has been increasing in fame. Recently only two machines were under order but it is understood that 10 are now under way or are soon to be started. The new machine takes the board, pastes and coats it, creases and completes the box in one operation. A cover machine does the same for paper box covers. An output of around 15,000 to 18,000 boxes a day is maintained by the machine in use at Mr. Claff's plant in Brockton. It is this sort of automatic machinery that is expected to revolutionize the paper box trade.

James Manning Plimpton

One of the oldest envelope manufacturers in the country, James Manning Plimpton, vice president and director of the United States Envelope Co., died last month at Norfolk, Conn. He was division manager of the Plimpton Mfg. Co., the U. S. Envelope Co. division at Hartford, which was acquired by the parent company in 1898. The Hartford division was founded by his uncle. His service in the industry covered 54 years and he was one of the most deeply beloved men in the industry.

Patents Granted L. L. Brown Paper Company

Patents have been issued recently to the L. L. Brown Paper Company of Adams, Mass., for a new and improved process of making a hinge or flexible section in paper.

The patented process is one by which the hinge is formed in the sheet by skilful regulation of the flowing fibers as the web is being formed. It is not obtained by the usual practices of sucking, blowing or scooping fibers from the formed web, or by grinding them out of the finished paper. Thus the new process leaves the formation of the sheet undisturbed.

The hinge made by this new method is known as Brown's Superior Flexible Hinge. It provides great flexibility and, in addition, retains the writing, ruling, and erasing surface absolutely unmarred.

Foreign Trade Opportunities

Additional information regarding the following foreign trade opportunities issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce may be obtained from the Bureau in Washington, D. C., or its branch offices. It is requested that the number of the inquiry be given at all times.

No. 21,568—Cardboard and gummed papermaking machinery. Durban, South Africa. Purchase desired.

No. 21,560—Paper cups, 40,000. Zurich, Switzerland. Agency desired.

No. 21,561—Newsprint paper. Nassau, Bahama. Purchase desired.

No. 21,583—Paper, transparent, brittle. Port au Prince, Haiti. Purchase desired.

No. 21,506—Paper box manufacturing machinery. Manila, Philippine Islands. Purchase desired.

No. 21,527—Caustic soda. Recife, Brazil. Agency desired.

No. 21,646—Crepe paper, plain and decorated. London, England. Agency desired.

No. 21,633—Overissued newspapers. Amoy, China. Purchase desired.

No. 21,673—Stationery, boxed, and writing paper. Vancouver, Canada. Agency desired.

No. 21,644—Paper working machinery, and machinery for making round paper or fibre cartons and fibre tubes. Vienna, Austria. Agency desired.

No. 21,760—Fancy paper and boards, and cover, art, bookbinding and box papers. Prague, Czechoslovakia. Purchase and agency desired.

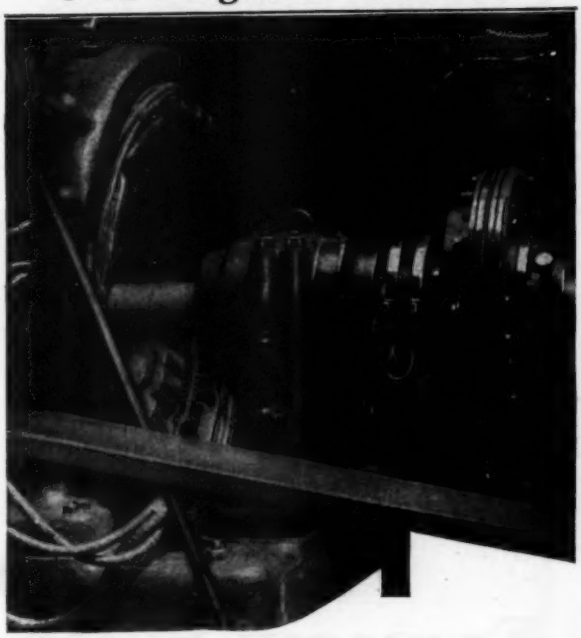
No. 21,763—Wrapping, blotting, and ruled paper and envelopes. Montevideo, Uruguay. Purchase and agency desired.

No. 21,876—Disks, spruce pulp paper, or material for. London, England. Purchase desired.

No. 21,879—Newsprint paper, large quantities. Antofogasta, Chile. Purchase desired.

No. 21,878—Newsprint paper, bond paper and art coated papers of good quality. London, England. Agency desired.

C-H Magnetic Clutches



Easy starting in this mill!

This Cutler-Hammer Magnetic Clutch on a box board machine drive eliminates starting difficulties.

The automatic smooth accelerating characteristics of the clutch enables the motor to pick up the load without grabbing or shock to the driven equipment.

The C-H Clutch saves power too. The machine is started by engaging the clutch with the motor at full speed. There are no excessive current peaks.

To learn how C-H Clutches can make a saving in your mill, just write for Publication P-11.

There are also many other advantages that you should know about. Send for the C-H Clutch Booklet and read the complete story.

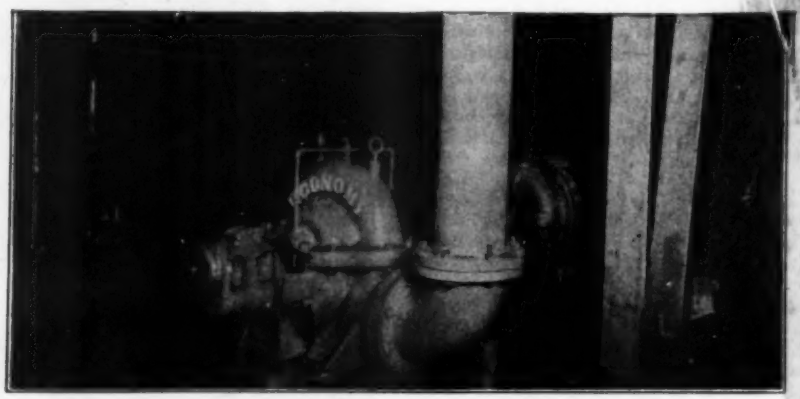
The CUTLER-HAMMER Mfg. Co.
Pioneer Manufacturers of Electric Control Apparatus
1254 St. Paul Avenue
MILWAUKEE, WISCONSIN

CUTLER C-H HAMMER
Industrial Efficiency Depends on Electrical Control

There is a more efficient pump

Paper mills which calculate carefully savings in handling materials should calculate possible savings in handling water and buy a more efficient pump.

Let us tell you of this paper mill installation



Economy Pumping Machinery Co.

83 North Curtis Street, Chicago, Ill.

A JORDAN ENGINE *for* EVERY PURPOSE

Direct Connected Motor Driven Jordans

Six Sizes:—
Baby Jordan
Pony Monarch
Monarch
Mammoth, Jr.
Mammoth
Bull Dog

DURING the past two years, over 80% of our Jordan output has been of the Direct Connected type.

Our Type "D" Jordans are particularly adapted to direct motor drive because of their sturdy construction and the design of our couplings and motor bases permits ample adjustment to insure full wear of Jordan plug and shell knives.

Paper Mill Engineers recognize more fully each day the advantages of Direct Connected units. Greater production and a finer quality of stock can be obtained and, because the speed of a motor is inherently uniform, a maximum quantity of a given grade of stock can be produced. Then, too, through the use of meters, the finishing point of the stock can be accurately indicated and the degree of contact of the Jordan knives can be determined more readily than when the "feel" of the operator alone is relied upon. Because belt pull is eliminated, the undue wear on bearings and eccentric position of the plugs, so often found in Belt Driven units, is avoided.

Specifications and Prices Furnished on Request

THE NOBLE & WOOD MACHINE CO. Hoosick Falls, N. Y.

For list of our entire products, see page 387 in the 1925 Paper and Pulp Mill Catalogue

MICHIGAN NEWS

Turbines Save K. V. P. Large Sums Annually

The use of extraction type steam turbines for general electrical power and bleeding steam for paper drying has been found efficient and economical by the Kalamazoo Vegetable Parchment Company. According to reports from the engineering department, the minimum saving per annum has been $12,804.48 per year and a maximum of $70,536.96 per year over other methods.

The company's two paper mills, Glendale pulp plant and parchmentizing wax plants are operated through two power plants. The steam is generated in a battery of Wickes vertical water tube boilers and electricity is generated by 1,250 kilowatt General Electric turbine generators, rated 480 volts, 3,600 r.p.m. For drying parchmentized paper, 11,000 pounds of steam per hour at five pounds pressure is extracted from each turbine.

Bradford Paper Company to Float Bond Issue

The Bradford Paper Company will issue $100,000 in six per cent first mortgage bonds, payable serially beginning July 1, 1929, over a period of 10 years. The Kalamazoo National Bank will be trustee of the issue. The funds derived from the sale of the bonds will be used to complete payment of the company's plant, certain equipment, and furnish additional working capital.

The trust mortgage, which has been filed with the register of deeds, covers two distinct property descriptions. One faces in Fulford street and Lane boulevard and has a frontage of 305.2 feet in Fulford and a depth of 227.8 feet. The second has a depth of 227.8 feet and fronts in Factory street 107 feet.

The River Raisin Paper Company, Monroe, is offering $1,600,000 six per cent first mortgage bonds, with which to refund the unpaid portion of $2,200,000 eight per cent bonds. The company's balance sheet June 30, 1926, showed a total of $6,080,628.60. The total value of the mill property is over $5,000,000, or $3,125 for every $1,000 issue in bonds.

British Labor Conditions May Affect Clay Prices

Indications of an increase in the price of English china clay, an indispensable product in connection with the coating of paper, are carried in the St. Austell "Cornish Guardian" of August 13. Any advance that may be made is laid directly as a result of the English coal strike and the high price of coal in that country.

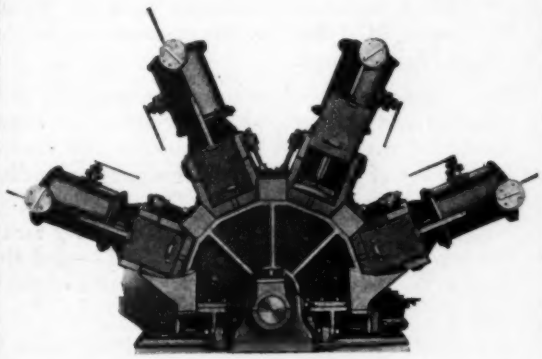
William E. Knight, Kalamazoo and South Haven representative of the Consolidated Mines of Cornwall, is in receipt of official notice of conditions in the Cornish clay mines, also a copy of the above named paper, which says in part: "The prolongation of the coal strike is having a serious effect on the China clay industry, as apart from the necessity of having to buy foreign coal at exorbitant prices, the results obtained from a ton of foreign coal are not comparable with those obtained from a ton of the class of British coal normally used in clay drying.

"Seeing that coal costs are, next to labor, the highest in the production of china clay, there must be an increase in the price of all grades of clay if the producers are to recoup themselves for the heavy extra costs they are having to incur."

Mr. Knight is in receipt of information that the steamship Hillbrock left England the latter part of August, loaded with clay for the coating mills of the Kalamazoo Valley. It is expected to arrive the latter part of September.

Clare M. Howland, credit manager of the Dudley Paper Company, Lansing, has been oppointed a member of the investigating committee of the protection department of the National Association of Credit Men.

"Repeat Orders Are the Best Indorsement"



International Grinders

Built with either three or four pockets — heavy construction throughout.

Pockets held in position by two large steel bolts—bridge trees extra heavy.

Pockets large in size, so that frequent refilling is unnecessary.

Save-alls below outside pockets catch all pulp when pockets are opened.

Special tapered bronze bushings —thread on inside only.

Bearings very large—wedge adjustable.

Equipped with Barker valves which are designed so that they stay tight.

GREEN BAY BARKER COMPANY

GreenBay Wisconsin

"Machinery Manufacturers"

Long Service — Few Replacements

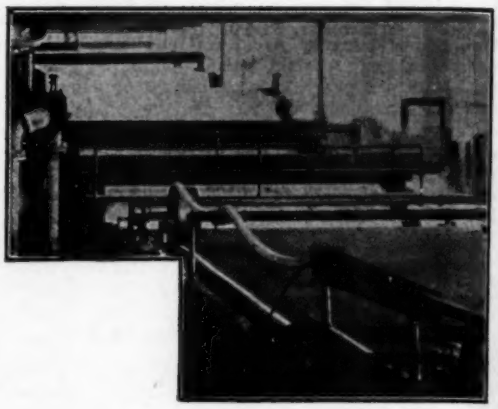
CABBLE Superior Fourdrinier Wires are the smooth, lasting kind that give the maximum of service with fewest replacements.

They represent the best results obtainable from the toughest and strongest phosphor bronze or brass wire, combined with expert workmanship and an intimate knowledge of the needs of the industry extending over three-quarters of a century.

Shut-downs from this source are extremely rare where Superior Fourdrinier Wires are used,—and they are used in hundreds of mills in every section of the United States.

If your mill is one of the few which is not using Cabble Superior Fourdrinier Wires, let us convince you of their superiority by giving them a trial.

Our wire cloth of the highest quality in phosphor bronze or brass, in standard mesh can be relied upon for Super-Service.



The WM. CABBLE EXCELSIOR WIRE MFG. CO.
80-88 AINSLIE STREET BROOKLYN, N. Y.

DRY PAPER EFFICIENTLY
The Fulton Dryer Drainage System

—Increased production
—Decreased steam pressure on the dryers
—Reduced steam cost for drying

Better Sheet—Better Finish—Less Shrinkage

—and cockling prevented by drying with graduated temperature — Less pressure or vacuum on paper machine dryers.

We will gladly refer you to mills using the Fulton System and making the same grade of paper as you. They will tell you their experience with the Fulton System.

U. S. Patents Dec. 10, 1919, and June 7, 1921. Canadian Patents July 6, 1920, also patents pending.

Fulton Engineering Co.
MIDDLETOWN, OHIO

The Beveridge Supply Co., Ltd., 628 St. Paul St. W., Montreal, Canadian Representatives

OHIO NEWS

New Machinery for Howard Paper Co.

The Maxwell Paper Co., of Franklin, is installing a complete paper mill equipment in the old Harding plant, which was purchased by Maxwell Howard, of the Howard Paper Co., Urbana, O., and the Aetna Paper Co., of Dayton.

The new owner is planning the expenditure of $2,000,000 in installing a fourdrinier and other equipment, and in improving its newly-acquired water rights.

If the present rate of progress continues; the Maxwell mills will be ready for operation about the first of next December. It had been hoped to have the plant running some time before that date, but the changes under way are so elaborate that more time will be required than had at first been anticipated.

The company is installing a Rice, Barton & Fales paper machine for the manufacture of bond and rag content papers. The machine is 152-inch and stated to be the most modern that money and ingenuity can devise. The Worcester, Mass., company installing this machine has a force of experts at work in the mill.

All other equipment entering into a modern mill is being placed at the same time so that when the wheels of the large paper machine move every detail will have been completed and no cessation of activities for the addition of any machinery will ensue.

It develops that the improvement of the water power which the Maxwell company bought from the American Writing Paper Co., which some years ago acquired the old Harding mill at Franklin, is proving to be a greater job than at first anticipated. New water power equipment is being placed by the Maxwell company's own engineers, who this week reported satisfactory progress, though the recent heavy rains have interfered with the work to an extent.

The water power includes the line extending to the Miami Valley Chautauqua grounds north of Franklin, where the State Dam is located. This water power is regarded as the most extensive, and probably the most valuable in the valley.

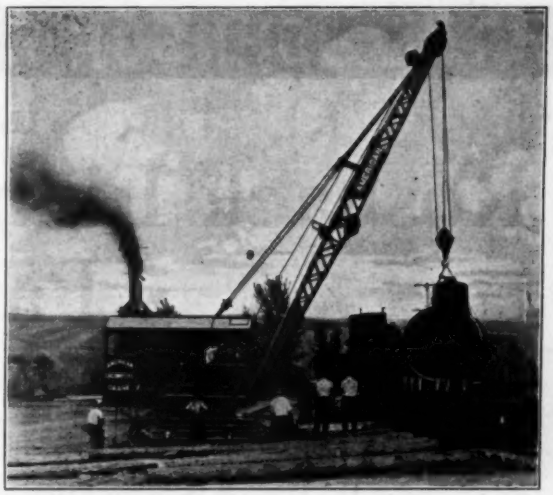
Excluding the water power improvements, it is estimated the Maxwell company will expend $1,500,000. The total cost of all improvements, however, will be close to $2,000,000.

The Miami Valley division of the Paper Mill Superintendents' Association held an informal meeting the past week and discussed plans for fall activities which will begin with the meeting to be conducted later this month. The Miami Valley organization is arranging for a series of winter meetings which will be addressed by members of the trade from various sections of the country.

The body of a man found in the Miami River recently near Hamilton was identified as that of Joseph Huber, 59 years old, an employee of the Harding paper mill, at Excello, O. He drew his wages, amounting to $42, at the mill and that was the last seen of him until his body was found floating in the river some days later. Mystery surrounds Huber's death. He lived in a houseboat along the river between Le Sourdsville and Excello and was the father of four children whose whereabouts are not known, according to the authorities who investigated. Huber's body was clad only in a working shirt. The remainder of his clothing was found in the houseboat and the police say there are indications he may have been attacked and robbed and that he was thrown into the river.

Severe storms and torrential rains have fallen in the Miami Valley during the past week, but no serious damage was entailed to paper mills. However, for a time several plants found it necessary to suspend operations for a time in order to prevent the water from entering, the forces having been engaged in some instances in protecting the plants. Hamilton suffered from high water, but the damage was confined mostly to establishments on the West Side and residential districts in the eastern part of that city.

The St. Marys, O., straw board plant, which was damaged



This one Machine is:

A Shovel When You Need a Shovel

A Crane When You Need a Crane

A Pile Driver When You Have Piles to Drive

THE "AMERICAN" Ten Ton Crane on Continuous Chain Treads is a three-in-one combination: Shovel, crane, pile driver—three machines for the price of one.

Rugged, speedy, responsive, the "AMERICAN" Ten Ton Crane will grade for logging road, handle pulp logs, unload coal, machinery and supplies at the mill; in fact, make itself generally useful.

"AMERICAN" Continuous Chain Treads are much more rugged than the usual crawler type tread. The treads are hard grade steel castings with hardened steel pins and the tread frames are steel with bronze bushed main bearings.

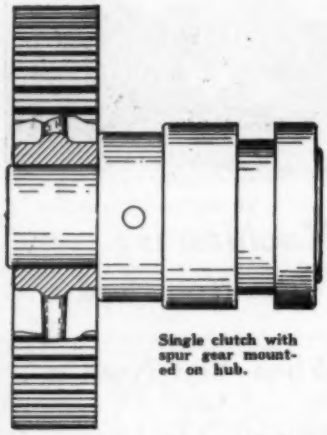
Here is a machine that will perform a wide range of work and give very little trouble due to repairs and adjustments.

AMERICAN HOIST & DERRICK CO.
Saint Paul, Minn.
New York, Chicago, Pittsburgh, Seattle, St. Louis, New Orleans.

THE JOHNSON FRICTION CLUTCH

As Used on the

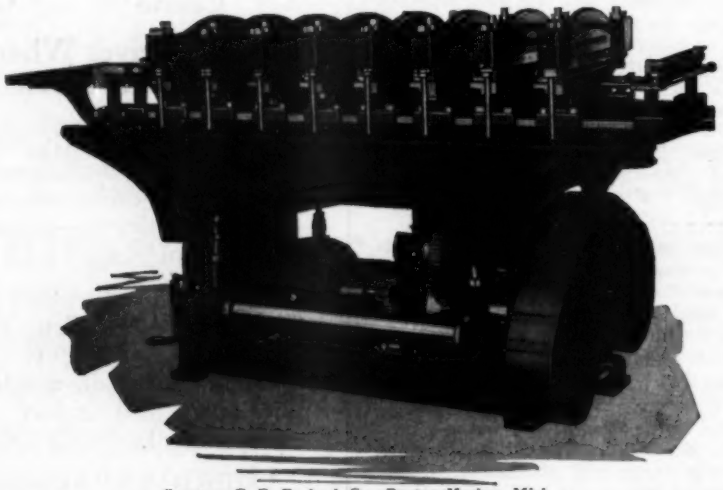
Rosback Eight-Hole Paper Perforator



Single clutch with spur gear mounted on hub.

The No. 5 JOHNSON Single Clutch is used on the main drive shaft. Operated by cam and spring 1,200 times per hour, or 7,680 TIMES PER DAY. The clutch is installed with spur gears mounted on hub, driven by a 2-horse-power motor.

This Clutch Operates 7,680 Times Per Day



Courtesy F. P. Rosback Co., Benton Harbor, Mich.

The cut printed above shows eight Perforating Heads in use. The machine perforates Fan Fold Forms such as used on freight bills, Underwood Billing Systems, etc., for filing in binders. JOHNSON Clutches are important factors, guaranteeing smooth quick starting, prompt stopping, and absolutely perfect control.

It was quite natural that Rosback—the largest Perforator factory in the world—chose JOHNSON Clutches for their new Multiple Head Perforator. World leaders quite generally turn to JOHNSON Clutches, whether for paper machines of every design, or machine tools of all types. Equip your paper machines with JOHNSON Clutches.

Write for Catalog "P. I."

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

by a storm some time ago, has made complete repairs. A roof was torn off the storage house and considerable stock was ruined.

Hoping to Rebuild Aqueduct

Officials of the Ohio Board of Public Works, and staff of state engineers who visited Hamilton the past week, stated that efforts may be made to rebuild the aqueduct which was washed away by high water two weeks ago. The aqueduct carried the water of the Miami and Erie canal over Gregory creek at Le Sourdsville. Several paper mills secured their power from this source and the destruction of the aqueduct is a loss to these concerns.

In Hamilton no action has been taken one way or the other to reconstruct the aqueduct or the abandonment of the canal, although the opinion was expressed that owing to the drop in the water level of the canal, the right of way would probably be abandoned. It was the expressed belief that the cost of making repairs would be prohibitive.

Reports received at Middletown, however, were to the effect that owners of mills between Le Sourdsville and Lockland and Cincinnati are hoping the State of Ohio will rebuild the aqueduct. They stated plants were shut down for lack of water supply and many men were thrown out of employment as a result. It was reported these mill owners might pay for the immediate construction of an aqueduct or flume to carry the canal across Gregory creek, but those questioned emphatically denied that such course was anticipated. The mill owners pointed out that large rentals are being paid to the State and consequently the State is responsible for delivering water to their plants.

R. T. Wisda, Columbus, director of the Ohio Board of Public Works, was to have conferred with mill men when on his visit to the Miami Valley inspecting the damage wrought by high water, but he failed to keep his appointment, it is said, and the paper men are at a loss to know what steps to take pending decision of the State authorities.

It is understood that repairs to the State Dam and construction of a flume or aqueduct would cost $30,000. It is said that the American Rolling Mills Co. will be asked to build an iron flume for the purpose.

The rental at present derived by the State from the mills for water supply through the canal is $12,000 per year. It is stated these rentals will be increased 50 per cent by the State if repairs are made.

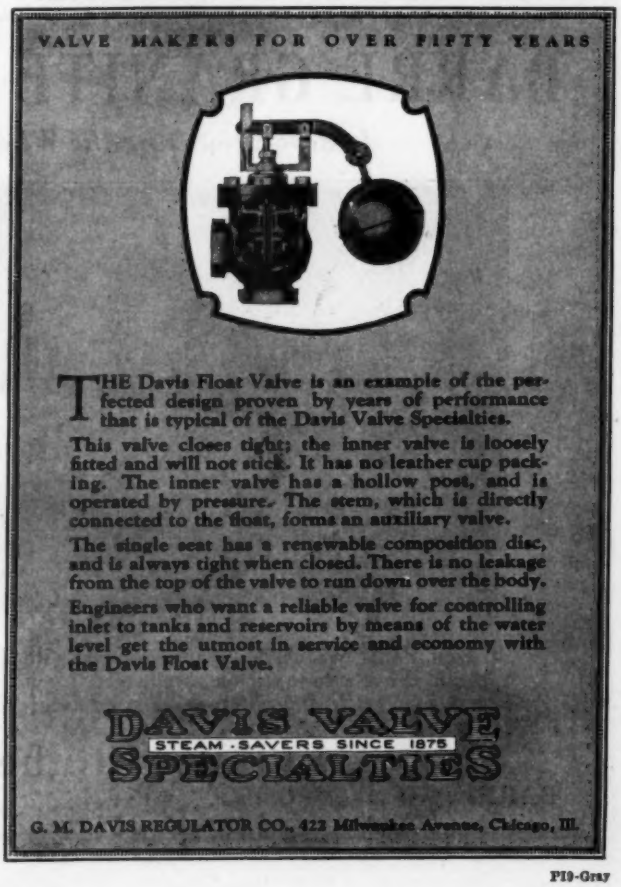
BRITISH CORRESPONDENCE

Present Trade Conditions

Although the coal strike has meant the loss of a considerable amount of business to every mill in the country, the British paper industry is still holding its own. The continental coal which is still being imported, in addition to being considerably more expensive than the British coal, has the disadvantage of being only about 50 per cent as efficient. A few mills are still in possession of some supplies of British coal, and are reaping now the benefit of their foresight in laying in stocks. As was reported last month, some mills have found it necessary to close down, while others have remodeled their boiler plant to burn oil. The latter firms are finding that oil as a fuel has such distinct advantages that if the cost could be reduced to that obtaining for coal at normal times, it is considered that there would be a general adaptation of furnaces for burning oil fuel.

From reports from various quarters, it would appear that the esparto mills are the worst sufferers, because the consumption of coal per ton of paper is considerably greater where grass is the raw material. Fine writing papers from rag materials also require more coal; but the higher selling price makes this a less weighty problem. In spite of the increased costs of production, the prices of fine writings have not been increased. There is no doubt that representatives of foreign mills have benefited by the closing of some of the British mills. The extensive importation of foreign wrappings prior

Lamp Guards
FLEXCO-LOK
Pay their way Day by Day
Day by day, year in and year out, they stand guard over your lamps. Theft, unauthorized removal, breakage with posible eye accidents, fire and other risks are minimized. Expanded steel reinforced, bright tin finish. No heavy shadows. Key locking (Flexco-Lok) or plain (Flexco) in range of sizes to warrant standardization.
SAMPLE of 60 watt Regular Type guard furnished gladly. Give socket diameter and lamp length. Approved by Underwriters Laboratories.
Flexible Steel Lacing Co.
4675 Lexington St.
Chicago, U.S.A.
Regular type. All types made for standard brass and weather proof sockets.
Made from Regular or Reflector types. No split handles and handle lock.
Reflector type.
For mill type and small lamps.
FLEXCO


VALVE MAKERS FOR OVER FIFTY YEARS
THE Davis Float Valve is an example of the perfected design proven by years of performance that is typical of the Davis Valve Specialties.
This valve closes tight; the inner valve is loosely fitted and will not stick. It has no leather cup packing. The inner valve has a hollow post, and is operated by pressure. The stem, which is directly connected to the float, forms an auxiliary valve.
The single seat has a renewable composition disc, and is always tight when closed. There is no leakage from the top of the valve to run down over the body.
Engineers who want a reliable valve for controlling inlet to tanks and reservoirs by means of the water level get the utmost in service and economy with the Davis Float Valve.
DAVIS VALVE SPECIALTIES
STEAM-SAVERS SINCE 1875
G. M. DAVIS REGULATOR CO., 422 Milwaukee Avenue, Chicago, Ill.

PI9-Gray

THE WATERBURY FELT CO.

SKANEATELES FALLS

New York

FELTS and JACKETS

Top and Bottom Wet Felts for board machines, with all the qualities requisite to insure long life and continuous production.

They Satisfy

Direct connected pump and motor of improved design and heavy construction for pumping pulp and thick stock. OPEN IMPELLER TYPE. HORIZONTAL SPLIT CASING. Interior surfaces machine finished. All bearings are removable from shaft without taking off any other part.

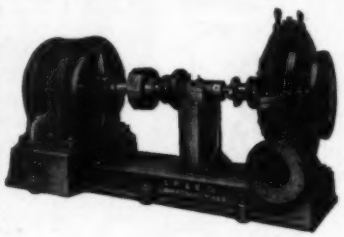


Fig. 67

We build Centrifugal Pumps exclusively—for all requirements

Write for Catalog 5B

LAWRENCE PUMP & ENGINE CO.

P. O. Box 708 Lawrence, Mass.

Pickles' Patent Automatic Steam Regulator FOR Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

W. F. PICKLES Buckland, Conn.

BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. BOSTON, MASS.

to the inauguration of the tariff on imported wrapping paper, combined with the effects of the strike is reputed to be responsible for the fact that wrapping mills are prominent among those which have found it necessary to close down. Those wrapping mills which are still carrying on have orders booked for some time ahead. The better class wrapping manufacturers do not anticipate any permanent adverse effect from the long drawn out coal stoppage and they are taking the opportunity, provided by the imposition of the tariff, of improving the quality of their productions. One mill, at least, is giving special attention to kraft wrappings, and it is considered that it is high time that serious attention was given to the branding of standardized products, thus making advertising a practical proposition.

Board of Trade returns reveal the unfortunate effects of the general strike and the prolonged coal stoppage: Export of all classes of paper and pulp for the first six months of this year totaled 2,259,672 hundredweight, compared with 2,398,704 hundredweight for the same period last year. The decrease is all the more serious when it is realized that for the first three months of this year the export figures showed an increase of 46,214 hundredweight over the figure for the corresponding period last year. On the other side, still more emphasizing the serious results of the coal strike, imports of the same materials have increased by 628,350 hundredweight over the corresponding period last year the increase of 432,204 hundredweights for the first quarter can easily be accounted for by the increased importation of wrapping paper and straw boards prior to the imposition of the tax.

There has, however, been an all-round increase in the importation of raw materials for paper making, which suggests, aside from the damage already done by the coal strike, a steady development in the output of British paper. This year the figure covering such items was 750,777 tons, while last year it was 657,155 tons.

Coming to figures covering a shorter and more recent period, the following tables show that the tendencies shown during the first six months are continued:

Imported in July

Paper making materials (value), £1,002,533, showing decrease of £4,852 in July, 1925.

Paper and cardboard (value), £1,639,342, showing increase of £313,171 on July, 1925.

Wood pulp (quantity), 124,427 tons, showing increase of 7,598 tons on July, 1925.

Paper (quantity), 1,676,823 cwts., showing increase of 368,552 cwts. on July, 1925.

Exported in July

Paper making materials (value), £150,365, showing decrease of £13,181 on July, 1925.

Paper and cardboard (value), £872,363, showing increase of £25,427 in July, 1925.

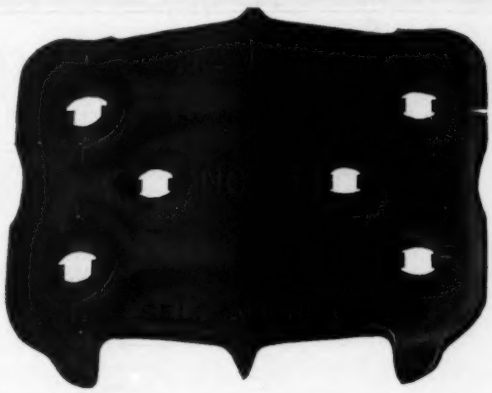
Paper making materials (quantity), 17,260 tons, showing increase of 1,255 tons on July, 1925.

Paper and cardboard (quantity), 418,034 cwts., showing decrease of 50,648 cwts. on July, 1925.

Australian Wood Pulp Possibilities

At the present time, Australia imports about 180,000 tons of paper of all sorts annually from Great Britain, but a recent article in *The Newspaper World*, London, suggests that in fifteen years' time Australia will be a long way towards being self-supporting in this respect. The following extract makes interesting reading:

"The possibility of developing the paper-pulp industry in South Australia, according to Mr. G. Lightfoot, assistant director of the Commonwealth Institute of Science, depends almost entirely upon the use of exotic pines. Eucalyptus trees can be grown under plantation conditions, but the weight of evidence is strongly in favor of pines. Pines will yield a paper pulp with much longer fibre and greater tearing strength than the eucalyptus. Forest reserves in South Australia cover some 90,000 acres, of which 10,000 acres are already covered with pines. If the remaining 80,000 acres were systematically planted at the rate of 5,000 acres per year, and 30,000 acres devoted solely to the production of pulpwood, leaving 60,000



"Eliminate Time Losses and Reduce Belt Trouble"

By using Standard Self Aligning Belt Fasteners Special Rust Proof No. 66 for 6 to 8 ply Transmission or Conveyor Belts any width.

You can't go wrong.

Self Aligning hold the plate firm and square on the belt while rivets are being driven.

It is not necessary to use a rivet holder. Nibs in the rivet hole align the rivet lengthwise of belt, the right way.

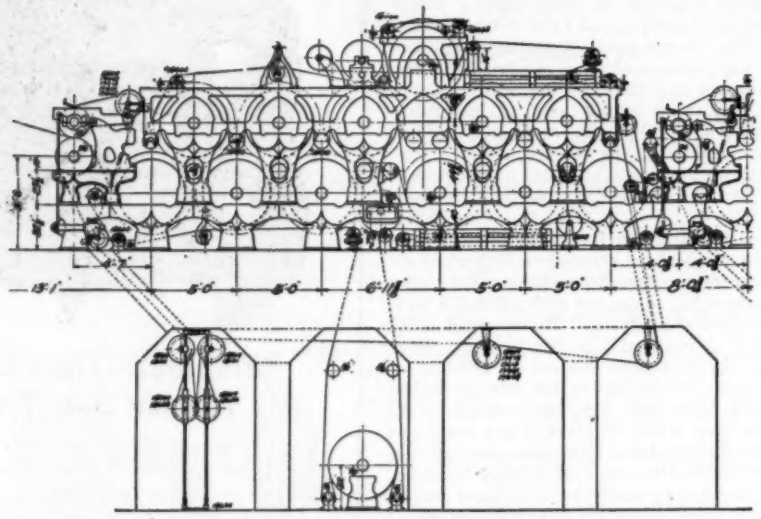
Self Aligning No. 66 are rust proof, and last indefinitely in wet or damp places, and you don't throw them away every time you take up a belt.

You need not turn your heavy wide Transmission or Conveyor belt over to clinch. Rivets may be clinched by driving against a block of metal on the underside of belt.

Send for sample fastener for comparison with what you are now using. Made for 3 to 8-ply belts.

Manufactured by

THE BOURNE-FULLER CO.
UPSON WORKS
Unionville, Conn., U. S. A.



The illustration is a reproduction of blueprint of Sheahan Paper Carrier (with the return ropes in the basement) to be installed on the 172-inch Paper Making Machine we are building for the Champion Coated Paper Company at Hamilton, Ohio.

The system consists of two endless ropes running side by side on flanged rims fastened to the ends of the dryers. The wet paper coming from the press passes between these ropes and is thus carried automatically over the dryers.

1000 Dryers equipped by us during the last 20 months

The strongest possible indication of the value which paper manufacturers place upon the Sheahan Paper Carrier is the quantity of orders they are constantly sending up—1000 dryers equipped during a period of less than two years.

A Sheahan Carrier carries the paper from the press to the calender end of the dryer **automatically.** There are no missed ends. No slack. No damp paper because of slack. And no paper broke.

Can you begin to estimate this advantage?

Just take your pencil and figure what it costs you to be without it—the loss of production due to the difficulty of leading the paper through the dryers by hand, the danger to your operators, and the money loss of paper broke while waiting for the slack to catch up.

A Sheahan Paper Carrier on each of your paper machines will save this loss for you and pay for itself in a very few months. It can be installed on machines of all types and makes—news, book, cover, straw wrapping, board, and specialty—and on both new and old equipment.

Write and let us send you more complete details.

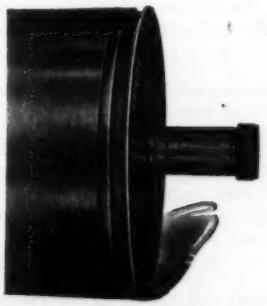


Illustration shows the special Black-Clawson flanged-rim bolted to the dryer. Notice that the flange touches the dryer only in a few spots, sufficient to line it up accurately with the dryer face. This construction provides an air space between the dryer and the flanged rim and keeps the rim cool so as not to injure the ropes. The Sheahan Paper Carrier can ordinarily be installed in one Sunday, or at most, two days. To facilitate the installation we furnish a drilling jig to drill the necessary three or four holes—it is the same jig we used to drill the bolt holes in the rim. An easy, accurate fit is always assured.

The Black-Clawson Company, Hamilton, Ohio

Established 1873

Export Offices: 15 Park Row, New York City

Builders of Highest Quality Paper and Pulp Mill Machinery. Patentees and Sole Builders of Vertical Dryers

BLACK-CLAWSON

SHEAHAN CARRIERS

Built with Machine-Tool Accuracy

for the production of milling-timber, Mr. Lightfoot estimates that from fifteen years onwards pulp to the annual value of £2,000,000 could be produced."

From the *Empire Forestry Journal* one learns that considerable forestry developments have taken place in the commonwealth. It is hoped to establish a forestry bureau to advise and assist in all matters relating to the development and utilization of Australian timber resources, and, in connection with the bureau, a Forest Products and Research Institute may be established.

A History of English Wall Paper, 1509-1914, by Alan Victor Sugden and John Ludlam Edmondson, has just been published by R. T. Batsford, Ltd., London, at a charge of £3. 3. 0 ($15.30). It has 281 pages and is well illustrated.

NORTHERN NEW YORK NEWS

Representative Thaddeus C. Sweet has acquired from H. L. Paddock and the Oswego Falls Corporation, the stock in Sweet Brothers Paper mills in Phoenix, which was taken over by the Fulton interests from the estate of Kirk Sweet who died in Syracuse a few years ago. The purchase gives the congressman and members of his family complete control of the Phoenix mills which make a fine grade of tissue paper.

Veteran Paper Makers

George W. Knowlton, president of Knowlton Brothers Paper Company, celebrated his 87th birthday August 17, and is one of the oldest active paper manufacturers in the country. Mr. Knowlton is in his office nearly every day and usually walks to the mill from his home, a distance of nearly a mile. He is a native of Watertown and entered the paper business when he was 16 years old. He has been engaged continuously in the paper business for 70 years and is one of the best known paper manufacturers in the country. In addition to being president of the paper company, is is also president of the Watertown National bank and looks actively after the affairs of the financial institution.

Mr. Knowlton is by no means the only veteran in the Knowlton plant. Mrs. Emma Douglas, at the age of 78 years, works daily in the rag room, sorting the rags from which the paper is made. She has been employed at the mill for 43 years.

Herbert E. Harmon, secretary of the company, has been with the organization for more than 40 years. James C. McCormick, assistant treasurer, has been with the company 38 years.

James M. Root, an engineer at the plant, has been with the company over 40 years. John Pelo, paper maker, has been employed by Knowltons for more than 40 years. Emerson A. Williams, department foreman, has been on the payroll for 36 years.

There are a number of retired paper makers in Watertown who worked for a quarter of a century or more with the Knowlton firm. The annual outing of the company was held at Southwick's beach last month and was attended by about 300 employees of the mill and their families.

Clarence J. Davis, a millwright employed by the Algonquin Paper Corporation of Ogdensburg, was instantly killed Aug. 17, when he came in contact with an electrically charged rail which carried power for the electric crane.

New Machine Installed

The Martin Pulp and Paper Company, whose plant is located at Yaleville, near Norwood, has just completed a storage room addition to its mill and will install a new machine in that portion formerly used for storage. The new addition consists of a store house 32 by 145 feet and a boiler room 38 feet by 48 feet. The machine is being built by the Bagley & Sewall company for the manufacture of tissue paper and will increase the present output of 3,000 tons to 6,000 tons a year.

Besides the new machine the company is installing a new 150 h. p. boiler and a 125 h. p. Erie variable speed engine. The

Pioneers in Paper Making

BELIEVING it will interest our friends to know something of the pioneer paper makers of America, brief notes of the earliest paper mills in different parts of the country will be recorded below from month to month.

Virginia's First Paper Mill

The establishment of a number of the early American Paper Mills was directly due to the needs and enterprise of some printer. Such was the case with Virginia's first paper mill.

William Parks came from England to Annapolis where he established the Maryland Gazette in 1727. This he continued for eight years, when, at the invitation of the college authorities, he moved to Williamsburg, Va., opened a book shop, set up a printing press, and in 1736 began the publication of the Virginia Gazette. Undoubtedly the problem of securing a supply of paper was a difficult one, and Parks solved it by the erection of his own paper mill at Williamsburg in 1744.

Established 1842

Cheney Bigelow Wire Works

Experienced and Progressive

Fourdrinier and Cylinder Wires
Dandy Rolls and Cylinder Moulds
made and recovered

SPRINGFIELD, MASSACHUSETTS

HILL CLUTCH
MILL EQUIPMENT

Brim-full of new information!

The New General Catalog of

Hill Clutch Mill Equipment

is just off the press

It illustrates every phase of "HILL CLUTCH" MILL EQUIPMENT. In addition, it contains tables, diagrams, engineering data, etc., which eliminates guess work in the selection of proper power transmission units. Every paper mill man interested in Power Transmission should have a copy. *Write Us.*

The Hill Clutch Machine & Foundry Co.

Power Transmission Engineers

General Office and Plant
CLEVELAND, OHIO

SPECIFY

Powell Valves

For Long Uninterrupted Service

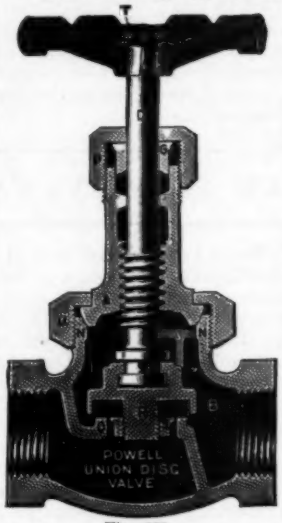


Fig. 150

Powell Composite Disc Valves

are furnished with bronze body and trimmings or iron body with bronze trimmings.

Bronze valves with union outlets are obtainable for both hot water and steam heating installations.

Discs are interchangeable with all standard vulcanized discs. However, we recommend Powell.

Descriptive circular on request.

THE WM. POWELL CO.

Dependable Engineering Appliances

2521-2531 Spring Grove Ave., Cincinnati, Ohio

ALBANY GREASE

NEVER DRIPS

In Public Confidence 58 Years

Don't risk your expensive machinery to a cheap lubricant. Get the best that money can buy. Albany Grease has been out of the experimental stage for 58 years—lubricates thoroughly. Sold in cans and barrels—all consistencies.

Demand Albany Grease—look for the Trade-Mark.

Your dealer can supply you. If not, write us.

ADAM COOK'S SONS
Inc.
8 Varick Street
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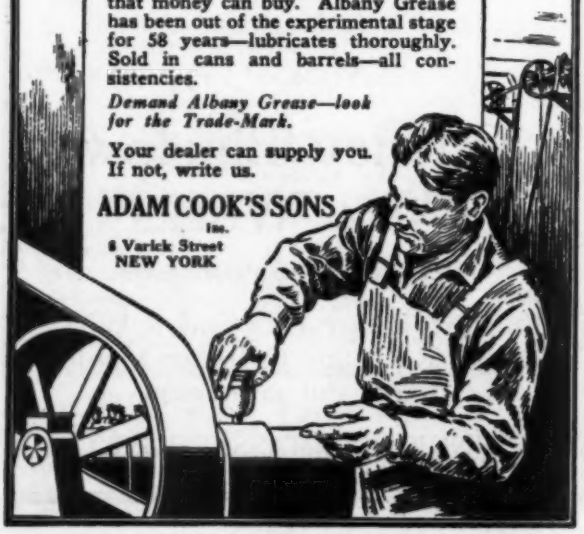
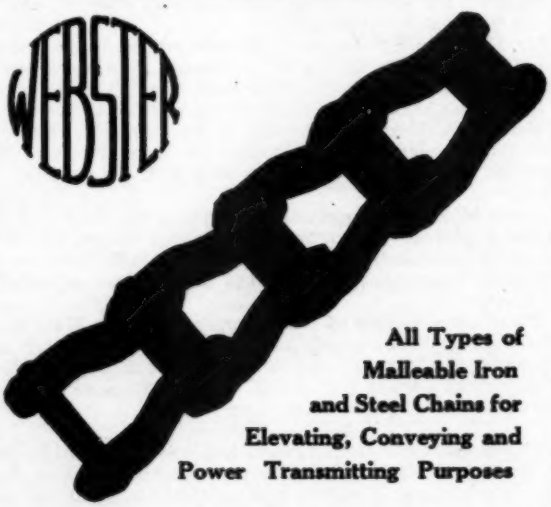


WEBSTER



All Types of Malleable Iron and Steel Chains for Elevating, Conveying and Power Transmitting Purposes

We can furnish all types of malleable iron and steel chains, including plain detachable, combination steel and malleable iron, riveted drive, ley bushed, malleable iron roller and steel bushed roller drive chains.

Catalog on request.

THE WEBSTER MFG. COMPANY
4500-4560 Cortland Street
CHICAGO

manufacture of tissue was taken up by the company in March, 1924, and the demand for the product necessitated the purchase of a second machine.

Mr. Frank A. Johnson, Superintendent of the Diana Paper Co., Harrisville, N. Y., has been appointed secretary-treasurer of the Northern New York Division of the American Paper and Pulp Mill Superintendents' Association. Mr. Johnson's appointment was made due to the resignation of Mr. Fred J. Rooney, president of the association.

Move Pulpwood by Canal

Movement of pulpwood through the port of Oswego for inland sulphite and paper mills will be resumed shortly. Raymond D. Borden, of the pulp division of the A.P.W. company of Albany was in Oswego a few days ago looking over the harbor facilities.

R. L. Taylor of the Taylor Transportation company announced that he had completed contracts for the movement of 50,000 cords of pulpwood for the Oswego Falls Corporation of Fulton. The movement of the pulpwood will be started with the opening of navigation next spring and 10,000 cords a year will be handled on a five year contract.

Especially designed boats will be employed, small enough to pass through the canals. The boats will be loaded at Gaspe and will be taken directly to Fulton without breaking cargo.

The A.P.W. company expects to ship pulpwood from Nova Scotia, via the St. Lawrence river, Lake Ontario and the New York state barge canal to Albany. The company's mills in Canada have a capacity of 30,000 cords a year. Shipments by water are being made now to the two Albany plants of the company and considerable wood pulp is being sold to newsprint mills near New York city, but it is desired to market at least 15,000 tons upstate and officials of the company are planning to use the water route via the St. Lawrence and through the port of Oswego and the barge canal.

New Manager for Taggart Plant

Seymour Harris, assistant general superintendent of the Green Island mill of the John A. Manning Paper company, and one of the oldest employees of the concern, has resigned to become general superintendent of the Taggart Brother Company of Watertown. He has already entered upon his new duties.

Mr. Harris entered the employ of the Manning company in 1896, when the plant was located in Troy and had served continuously with that firm, holding various executive positions.

Before relinquishing his duties with the Green Island mill, Mr. Harris was the guest of honor at a farewell reception. He was presented with a gold watch by his fellow employees.

International Picking Up

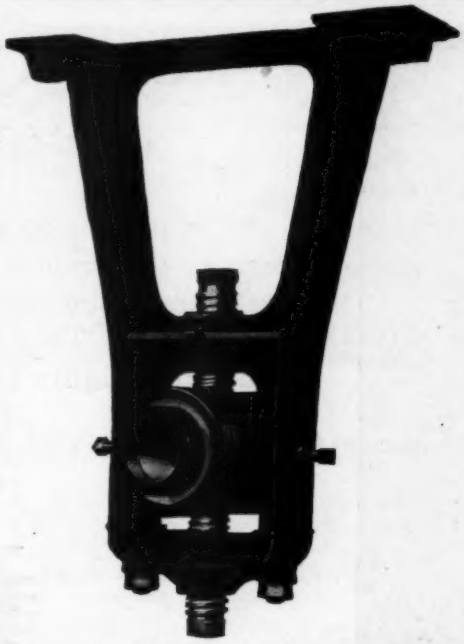
Expansion of newsprint manufacturing facilities and development on a large scale of its Canadian water power properties have obscured to a great extent the progress being made by the International Paper Company in improvement of current earning power.

Earnings in 1925 were small, totaling only $1.14 a share on 500,000 no par common shares. Net after charges and taxes was $2,550,301, compared with $2,532,656 in 1924. But a contingency reserve fund was set up in 1924 which was drawn upon and added to surplus by the end of the succeeding year.

Earnings of International Paper for the first three or four months of this year were almost negligible, but in the middle of the spring it can be said to have turned the corner and begun to manifest some earning power. With the early months of the year exceedingly poor in the way of earnings, the showing at the end of the first half year was not exceedingly good.

Although the leanest months of the year for newsprint manufacturers are July, August and September, International Paper earned approximately $130,000 on its 500,000 shares of common in July. This was roughly the equivalent of 25 cents a share.

Earnings in the third quarter are expected to be a little over 50 cents a common share or the amount of the dividend inaugurated on Aug. 15, last. With the expansion of capacity



Now—Wood-Fafnir Savings Combined!

There are decided and definite savings in specifying Wood-Fafnir equipped Hangers, Pillow Blocks, Friction Clutches, etc.

Linked to the unfailing dependableness of the Universal Giant Line of Power Transmission Machinery is the smooth running, power and oil saving Fafnir Ball Bearing. That means trouble saving, money saving power transmission units.

All of the best qualities of two great organizations are combined in the Wood-Fafnir Line of Power Transmission Appliances—and there is a Wood-Fafnir type of Power Transmission Appliance for practically every power drive need.

When you insist on getting the Wood-Fafnir Product you know that you are securing the best values in money saving performance.

Just phone your local Wood's Dealer.

T. B. Wood Sons Co.
Chambersburg, Pa.

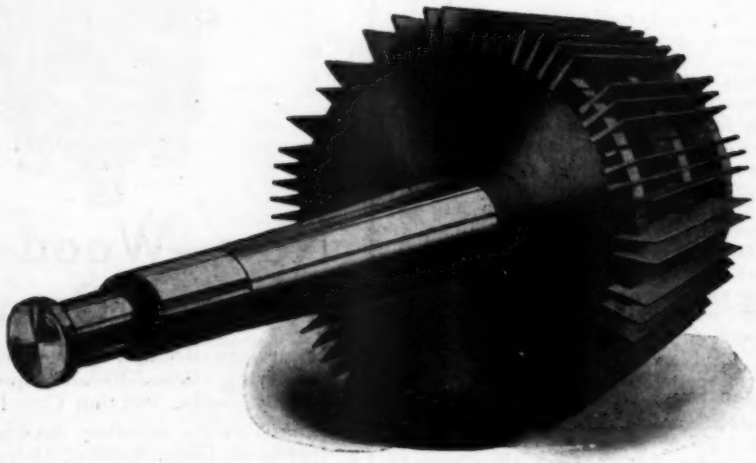
NEW ENGLAND BRANCH Cambridge, Mass. SOUTHERN BRANCH Greenville, S.C.

Makers of Power Transmission Machinery Since 1857

Shafting, Cast Iron Hangers, Pulleys, Flexible Couplings, Friction Clutches, Short Center Belt Drives, Hanger Boxes, Pillow Blocks, etc., equipped with or without Wood-Fafnir Ball Bearings.

Send Us Your Old Beater Rolls

Mills frequently send us their old rolls of the banded or bandless type, made by other manufacturers, to be rebuilt into our type of Bandless Beater Roll. They would not do this, unless they had some mighty good reasons.



Downingtown Bandless Beater Rolls have crucible steel heads and milled dovetail slots to hold the flybars,—the flybars having dovetail lugs to fill the slots, milled to a perfect fit. Compare this with keys, wedges, bolts and nuts, bands, fusible metals, etc., used to secure flybars in other rolls and you will learn why many concerns are sending us their old rolls.

Why not change your old-fashioned rolls to our Bandless Type and be assured of full wear from flybars? Send us one of your old rolls and note the result.

Catalog on Request

DOWNINGTOWN MANUFACTURING COMPANY
Paper and Pulp Mill Machinery
EAST DOWNINGTOWN, PA., U.S.A.

at Three Rivers, results of the final quarter are estimated at double the third quarter.

Consequently International Paper should show by the end of the year somewhere in the neighborhood of $2 a share on its 500,000 no par common shares. The outlook for 1927 with the maintenance of the $65 a ton price for newsprint practically assured and a full year of increased low cost production in Canada, is that this year's earnings will be exceeded.

Gustave Bruett, 62, for many years employed as a millwright in various paper mills in Northern New York, is dead. Mr. Bruett was a native of Paris and as a boy passed through the siege of Paris in the Franco-Prussian war. He had been employed as master mechanic in the mills of Knowlton Brothers and the Ontario mill of the International Paper Company. He had also been employed in a similar capacity in New Hampshire. He retired from active work about 19 years ago.

John F. Hunt, a prominent paper box manufacturer of Rochester, has been designated by the Democrats as candidate for state senator from the 45th senatorial district of New York.

The Racquette River Paper Co., of Potsdam, has completed a small power house on the site of the Hewittville pulp mill destroyed by fire last winter. Two generators were attached to the water wheels of the old mill which were not damaged by the fire. Nothing has been done toward rebuilding the mill and nothing is contemplated in the near future, officials of the company said.

E. G. Bullis of Watertown, connected for about a year with the West End Paper Company, of Carthage, has recently become affiliated with the Oswego Falls Corporation of Fulton. Mr. Bullis is well known throughout Northern New York in paper manufacturing circles. Before coming to Watertown he was engaged in the paper business in New York. He has been engaged in the paper manufacturing business, especially the selling end, for the last 20 years. Mr. Bullis will be connected with the Oswego Falls Corporation in the capacity of a salesman.

The National Paper Products Company, of Carthage, has filed a complaint with the Interstate Commerce Commission against the New York Central and other roads. The complaint deals with carload shipments of paper towels and toilet paper to Middle Atlantic and Midwestern states. The National Paper Products Company declares that in this business it competes with other manufacturers, principally in Albany, Berlin, N. H., Philadelphia, Pa., and Green Bay, Wis. The rates on this freight from Carthage are relatively higher than from most of the competing points and are actually higher in many instances where distance and operating conditions justify lower rates, it is asserted in the complaint. The commission is asked to investigate the situation and order a readjustment of rates from Carthage.

It is understood that the Keystone Wood Products Company intends to form a company for the manufacture of hardwood lumber and hardwood chemicals in a tract north of Utica. The contract calls for the absolute clearing of land, including diseased wood, culls, stumps, and branches, leaving the ground absolutely bare so that it can be reforested, and at the same time eliminate the danger from fire spreading in slash.

Big Log Drive Ends

The largest and doubtless the last log drive destined to float down the Black River for many years to come has just been floated into the pocket of the rossing plant of the St. Regis Paper Company at Carthage. Over 45,000 cords of spruce logs were floated down the river to be cut into pulp wood lengths before Nov. 1. The logs were cleared off near the Stillwater reservoir and as the marketable trees have been cleared off, no more will be cut until the second growth attains sufficient size for cutting. The logs were floated down Beaver river to its confluence with Black river where they are made up into rafts and towed to the rossing plant.

Overhead Lines in paper plant

Overhead Pipe Lines

SUCCESSFUL overhead pipe lines have been made possible with "Michigan" Combination Steel and Wood Pipe. A special steel flange fitting eliminates the ordinary leaks and troubles.

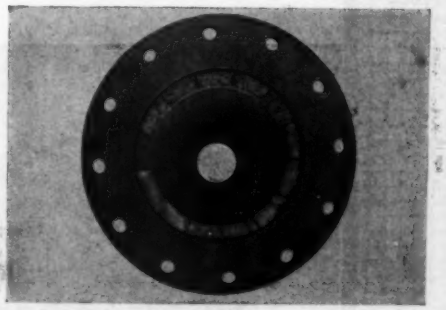
This flange fits over the tenon of the pipe and is used simply as a connection. No metal is exposed to the liquid, which keeps it free from specks of rust to harm the paper.

"Michigan" Combination Steel and Wood Pipe is made of seasoned wood, reinforced with spirally wound steel bands. The steel exterior is protected by two coats of asphaltum, applied hot. There is no chance for corrosion or bursting under pressure.

"Michigan" pipe is stronger, more durable, and has 20% greater carrying capacity than iron pipe.

The number of paper mills using "Michigan" pipe is increasing daily. It is found best for conveying white water, sulphite, ground wood and pure water.

Send us your blueprints and we will gladly furnish estimates on pipe and fittings to suit your requirements.



End view of Special Flange Coupling. Note metal outside

Tell us about your piping problem. If necessary, one of our engineers will gladly call and go over it with you. Remember, every piece of pipe and every bit of work is guaranteed.

MICHIGAN PIPE CO.

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Save-All Wires

Washer Wires

In Brass and Phosphor Bronze

"Appleton Wires Are Good Wires"

APPLETON WIRE WORKS, Inc.
Appleton, Wis., U. S. A.

The drive has been in charge of Superintendent F. H. Fredenberg. The logs are floated down in 12 foot lengths and are sawed into three foot lengths. About 30 cars are filled daily and are shipped to the company's plant at Deferiet.

The Hinde & Dauche Company, of Watertown, has joined in the bituminous coal rate case with other paper mills in Northern New York.

Albrecht Pagenstecher

Albrecht Pagenstecher, who had the credit of first producing groundwood pulp on a commercial scale in the United States, died at his home in Cornwall-on-the-Hudson, near Newburgh, N. Y., on Friday, August 6, 1926, in the eighty-eighth year of his life. Mr. Pagenstecher was born in Osnabruck, Germany, April 11, 1839. In March, 1867, he secured the American rights on Voelter's process for making mechanical pulp by pressing spruce logs against a revolving grindstone in the presence of water. With other members of his family he operated the first groundwood mill in Curtisville, now Interlaken, Mass., and was thus a pioneer in the manufacture of cheap newsprint paper.

Mr. Pagenstecher also was a pioneer in the Canadian field, organizing the Laurentide Pulp Company, at Grand' Mère, Quebec, of which he was the first president. Other companies organized by him were the Hudson River Pulp & Paper Company, the Montague Paper Company, the Turners Falls Pulp Company, the Keith Paper Company, the Central Paper Company, of Muskegon, Mich., and the Manufacturers Paper Company. For many years, he was a director of the International Paper Company which had absorbed some of the plants in which he held large interests. Mr. Pagenstecher is survived by his wife, seven children and seventeen grandchildren.

A chemical pulp cooking process has been invented by George Sivola of Dexter. The process enables one to determine the time required for chemical reaction to take place.

Sizing Factors[1]

By H. M. EASTMAN
Paper Makers Chemical Co., Holyoke, Mass

A FEW years ago the average papermaker considered the paper sized if he had added the usual number of pails of size to his beaters. If the sheet was not up to his idea of sizing he added more size and in some cases alum to the beaters. These not availing he would begin to switch pulp, color, batches of size and if still no effect, he would go onto a slack sized order and try again after a while.

Just as much of our everyday life has changed in the last decade or two so also has our knowledge of sizing advanced with rapid strides. During the process of gaining this knowledge we have learned much of the many factors affecting the sizing. Not only have we learned to value properly the different factors but we have learned to arrange them and add them in such a fashion that we seldom are forced to change orders when making a correctly sized paper.

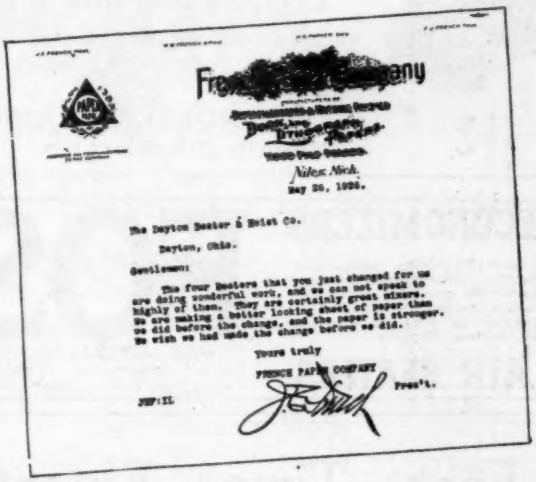
There are many of these factors affecting the sizing and I do not intend to enumerate all of them. The possible combinations are larger still and there are times when the wrong combinations will cause much more havoc than would be thought possible considering the magnitude of the individual factors.

If you will recall a little algebra, these letters are used preceded by numbers connected by either plus or minus signs. We can easily think of these letters as being the different factors affecting the sizing and the numbers, constants, which are placed there to be multiplied by the factors and so evaluate them or make one relatively larger than the next one. Then the algebraic sum will be equal to the total sizing in the sheet as it is used by the ultimate consumer. This sum should include not only the factors which I will later mention but also must include a factor for each mill, at times each machine in a mill, or even some certain beater in a mill. As you well

[1] Presented at the joint meeting of the Northeastern and Connecticut Valley Divisions of the American Pulp and Paper Mill Superintendents Association, held at the Hotel Nonotuck, Holyoke, Mass., June 26, 1926.

Work Well Done Brings Welcome Words of Praise

First "Dayton" High Speed Beater installed in 1925. Repeat order for three more came in early last spring.



Niles, Mich.
May 26, 1926.

The Dayton Beater & Hoist Co.
Dayton, Ohio.

Gentlemen:

The four Beaters that you just changed for us are doing wonderful work, and we can not speak highly of them. They are certainly great mixers. We are making a better looking sheet of paper than we did before the change, and the paper is stronger. We wish we had made the change before we did.

Yours truly
PRINCE PAPER COMPANY
Pres't.

JHP:IL

We have been making high speed beaters and rebuilding Holland type engines into Daytons, since 1912, fourteen years ago. In that time we have served well onto fifty mills.

That we have served well is evidenced by orders for additional equipment from practically all mills where "Daytons" have been in use six months or longer.

Investigate the Dayton High Speed Beater. Facts and figures await your call for them.

We Rest Our Case on Performance

DB & H

The Dayton Beater & Hoist Co.

Dayton, Ohio

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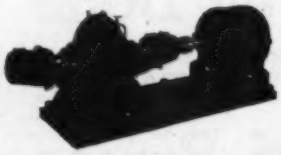

The Bethlehem Horizontal Centrifugal Pump is of the double-suction, single-stage type with horizontal split casings. Capacities 200 to 17,000 gallons per minute against heads of 20 to 250 feet.

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"BEST AT EVERY TURN"

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The value of Foster Heat Engineering Service and Foster Construction are proven by more than 20 years of experience and over 11,000 installations in every industry and in every type of plant.

WATER WALLS

Fact....Time....Extent

Often, in the Process Industries, it is essential or highly advisable to have a continuous, definite record of mechanical operation—of machinery, elevators, hoists, conveyors, the opening or closing of doors, gates, valves, etc.

Such records assist in the harmonizing of plant operations and their accurate control—which constitute **good plant management** . . . which, in turn, ensures economical production.

Bristol's Mechanical Motion Recorder automatically charts not only the fact of the operation, but also the time and extent of the mechanical movement.

Bristol's Electrical Operation Recorder—which automatically records the fact, time and duration of operation—can be had in either Round Chart or Strip Chart model. The former can record on one chart any number of operations up to 12; the latter model, any number up to 20.

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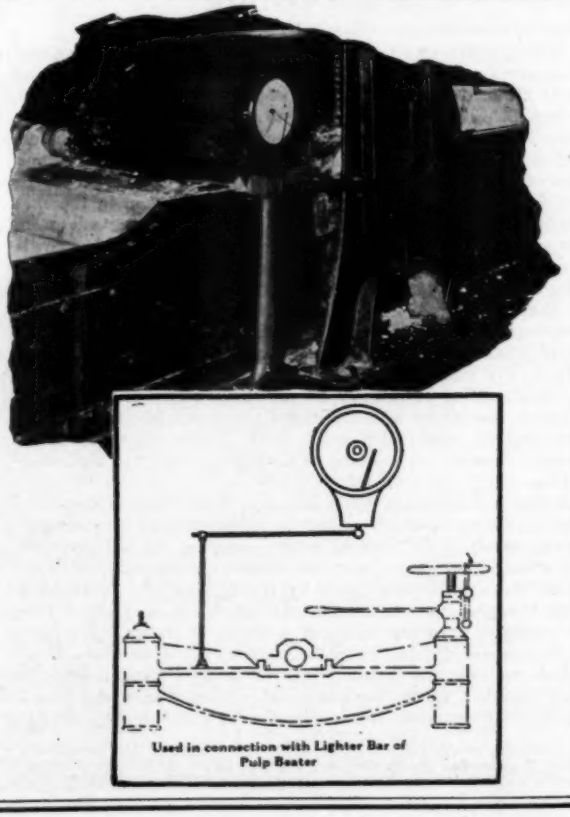


Used in connection with Lighter Bar of Pulp Beater

know, it frequently takes very little to throw the best operated mill into a very good hay factory.

One of the first things that should be checked up in a mill is hardness. This must include all the possible sources of the same elements which is considered as hardness in water. These are salts of lime and magnesia, and they will be found not only in the water but also in the stock and clay. To a certain extent the acidity of some pulp may be included under this heading although the acidity of the backwater is of another nature and is not harmful if properly handled. Bleach remaining in the stock contains not only the harmful lime but also the chlorine which will leave the rosin in such a state that it is not a very good sizing agent.

Care in the Furnish

Another factor that is very often neglected or rather left as it always has been, is the order of furnish. For the same reason that some dyes must be handled with extreme care so also should the size and alum. In some mills the alum should go in with the water before any stock, while in other mills it should go in as the valve is pulled. In other mills it is best to sit on the fence and put some in first and some in last. The answer in your mill will be determined by trying and finding the course that will give the most sizing by using the least size. These additions in a mill beating thirty minutes cannot be as well timed as in a mill where the stock is beaten for eight hours.

The method of adding the size is very important, and needs special emphasis. In fact it has about the largest constant of any of the factors. This applies to even sizing as much as it does to hard sizing. The same amount of size added to the same amount of stock and properly set on the stock with the same treatment should always give the same sized sheet. To add the same amount of size to each beater we should have a goodly dilution and then the proper measuring equipment. The larger the bulk which can be measured, the greater will be the accuracy. If a mill can be equipped to handle a two or three per cent size emulsion with tall measuring tanks, proper gauge boards, and a pipe for introducing the size evenly across the tub in front of the beater roll, there should be very little unevenly sized paper.

The temperature of the stock is often a much neglected factor, but it is often the easiest one to combat. It is about the least really understood of all these various factors. If the proper constants are applied to the other factors, there will be no difficulty in maintaining proper sizing under any temperature conditions. But, the conditions must not be mixed. If the conditions are laid out for hot beaters and then they are furnished cold the sizing will change, but will probably be much better than if the conditions were reversed. However, the sizing will not be so good as if the beaters had been furnished for cold conditions. The temperature of the wash-out water, temperature of the chests, effect of the jordans and the temperature of the backwater added at the head boxes must all be considered. Any heat generated in the beaters or through the jordans must be considered.

The stock will also de-size if it lies in the chest for any length of time as over a week-end or during a shut-down. For this reason, it is always best to have as little time as possible lapse between the time the size is added to the beaters and the time the stock goes over the wire. There are also some conditions which will exaggerate this effect while others will greatly minimize it. These latter ones are the conditions to approximate.

If these factors as well as their constants could be mathematically set down and evaluated for all kinds of paper and board in each different kind of mill in the country, the sizing problem would be much simpler. When one considers these main items that have been mentioned and then adds the other constants that are individual for each machine, it is easily seen that any strict classification of them is almost impossible. To make the problem more interesting, there are all the possible combinations of all these factors. Each mill has a small interlocking system that must function smoothly if it is to make paper continuously and perfectly. The only method is to consider each factor separately, then weigh and judge until the best result is obtained.

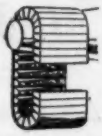
One of the most difficult questions to have answered accurately is "How hard do you wish the sheet sized?" Any

Cementing

This is economical

There is more than one way of buying the things you need for your plant. Standardize on Duxbak Leather Belting and you can save enough to buy a much needed piece of equipment.

Let us tell you about some paper mill drives where Duxbak is saving money. If you use leather belts send for our free booklet, "There's Money in This for You." It tells you how to repair belts and to make them endless.



Schieren All-Leather Transformer Belts

The tapered blocks on Schieren All-Leather Transformers or speed change belts do not warp, crack or split because they are made of the best leather. That's why they last much longer than belts made with wooden blocks.

DUXBAK BELTING

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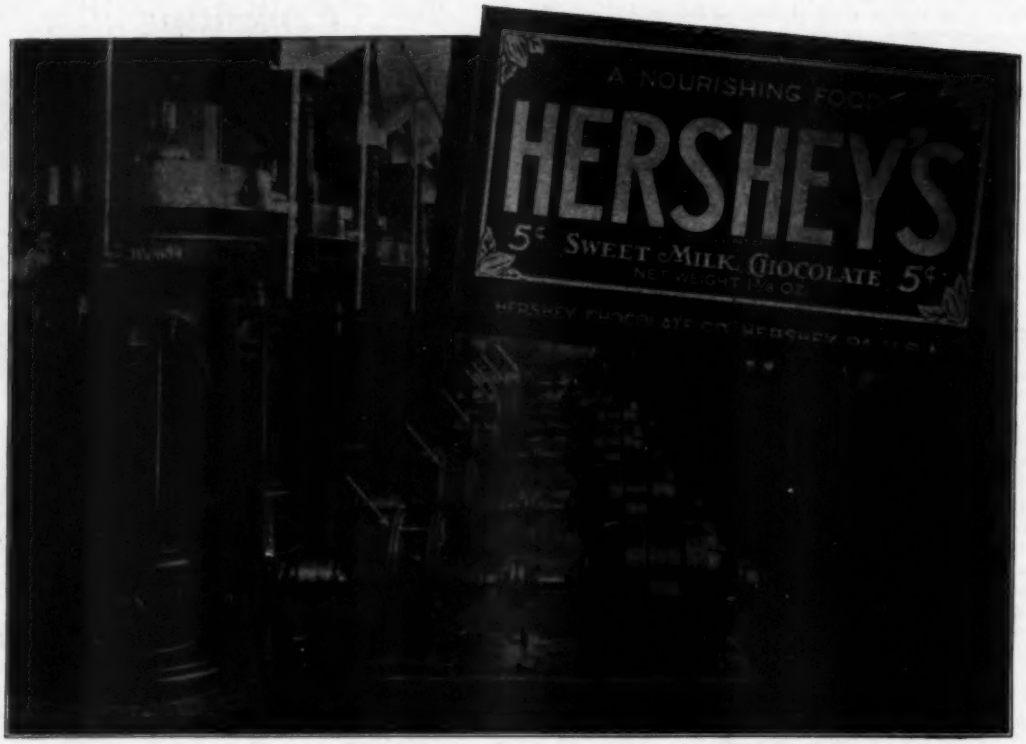

James Reducers Help To Make Hershey Bars

Select almost any leading industrial—manufacturers of automobile tires, chocolate candy, condensed milk, textiles, or any other commodity, and you will find processed machines, elevators, conveyors and power transmission lines in their plants driven through James Planetary Spur Gear Speed Reducers.

James Reducers are known everywhere for the faithful service they render and for their maintenance-free, trouble-proof operation. More than forty years of specialization is represented in every unit—specialization in the field of speed reduction for every type of drive—high ratios, low ratios—vertical drives, angle drives, horizontal drives—in fact, drives for every conceivable condition.

Regardless of the type of drive you need, there is a James Reducer just suited to the condition.

May we have an opportunity to serve you?

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D. O. JAMES MANUFACTURING CO.
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D.O.JAMES

wise superintendent immediately will ask "What are you talking about?" The question really means nothing and it is absurd to expect to receive an intelligent answer.

The question as well as the answer should be to determine if possible what the ultimate user hopes to do with the sheet. Is it to be sized against printing or for writing? Is the sheet to be stiffened or made limp? Is the sheet to be water repellant or water absorbent? The answers to these will generally tell most of the story.

All of the testers for testing sizing are very fine. They form equipment which every paper mill laboratory should include. However, I feel that none of them tell the whole story, and they should be used in conjunction with some other test, or tests. For instance, a sheet of printing paper might show a very good Valley Size Test, yet when it was put over a printing press it would not register. You all know the reason and it was no fault of the test. The test alone was not sufficient. You would not wish to buy paper on the caliper alone, then why buy it on one size test alone.

When the results desired are known, and the various conditions that will effect the factors as well as their constants have been investigated, there is no reason why any mill should have slack sized paper. The occasional pyramiding of these factors which is the usual cause of the size trouble in any mill cannot be over emphasized. When the cause is finally found, nearly always there will be two or three factors that have been materially involved.

In conclusion, the following factors will usually yield well sized paper at all times: a full furnish, half-way hardness, temperate temperature and treatment, should lead to a sheet sized to meet any requirements.

The Telephone As a First Aid

When the American Red Cross recently announced its annual awards for first aid rescue work during 1925, readers of the daily papers noticed that the first, second and third awards had gone to Bell telephone men. The winners were James G. White, Vancouver, Wash., Elmer Ray Porter, Greensburg, Pa., and William Sellman, Winnemucca, Nev.

The Red Cross news item recalls the fact that safety first and first aid training have been actively promoted in the Bell System for years. The long distance organization of the system has in operation a plan of this type that is characteristic of many others. Classes are held regularly. A certificate is given each employee who has satisfactorily completed the course and passed an examination given under Red Cross auspices. The knowledge thus gained is not only valuable in the employees' work but has on innumerable occasions saved the lives of others.

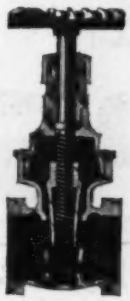
A farmer near Verbank, N. Y., for example, was chopping wood when his axe slipped, badly cutting his foot. He made his way out of the woods but fainted from loss of blood beside the road. Here he was found by a long lines construction crew who were passing in their truck. One of them cleansed the wound, put on a compress and the proper kind of bandage. The injured man was revived and carried to his house. When a doctor arrived, he commended the measures taken and said that without them the farmer would probably have died from loss of blood.

At another time an employee at Altoona, Pa., saw a crowd collected around a twelve-year-old boy lying fact downward on the pavement. The boy had been badly shocked when his head had touched a fire alarm box which had become charged by crossed wires. The spectators were afraid to go to his aid. The telephone man, realizing the nature of the accident, applied artificial respiration and succeeded in bringing the boy to consciousness as the ambulance arrived.

A most dramatic application of first aid occurred one night last February, when a telephone crew of six men were on their way to repair a line break near Uniontown, Pa. As the gang's truck nosed its way through the deep snow, the men disposed themselves among the coils of wire, crossarms and ropes, where they were protected from the weather by a tarpaulin cover.

During the night the truck stopped to enable everybody to stretch a bit, as they were feeling cold and sleepy. At the first breath of fresh air two of the men staggered and fell, quickly followed by two of their comrades. The foreman,

Tested on both sides of the wedge



Sectional view
Fig. 370, screwed, Jenkins Standard Bronze Gate Valve

It is typical of the thoroughness of Jenkins manufacture that every Jenkins Gate Valve is tested on both sides of the double-faced wedge. If a valve does not make good in a test which allows a wide safety margin, it does not leave the factory.

The testing idea is applied to metals, too. Analyses by competent metallurgists are given before and after casting.

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Special Lubricants for Paper Mill Service

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Positively removes and prevents scale, stops minor leaks, pitting and corrosion

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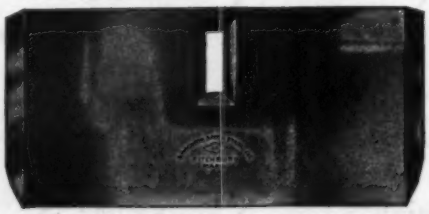

Tough steel of edge-holding quality, backed by expert workmanship, makes Simonds Knives the most serviceable for pulp and paper mills.

Write for Catalog and Prices

See page 393 in the 1926 Paper and Pulp Mill Catalog

Simonds Saw and Steel Co.

Established 1832 FITCHBURG, MASS.
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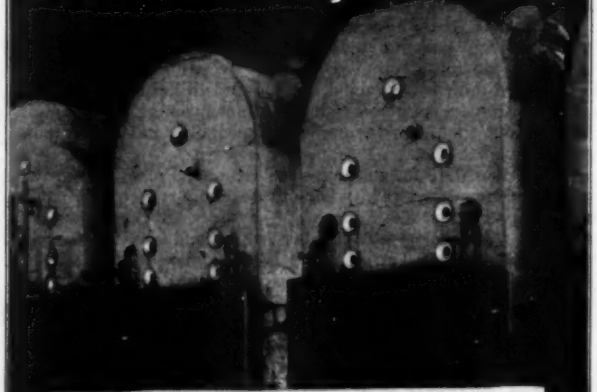
SWENSON

Reclaiming Machinery for Soda and Sulphate Mills



Evaporators—Leaching Batteries
Incinerators—Digesters, etc.
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See pages 402-403 in the 1926 Paper and Pulp Catalogue
SWENSON EVAPORATOR CO.
[Subsidiary of Whiting Corporation]
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Sales Offices in New York, Chicago, Buffalo, Detroit and San Francisco

riding with the driver on the front seat, jumped out to see four of his men lying breathless in the snow, respiratory nerves paralyzed. He started resuscitation immediately. For three hours he administered first to one, then another, until all were conscious. The drive was resumed with all speed to Uniontown where the men were placed under care of a physician.

In his diagnosis the doctor stated that the exhaust gas from the engine, laden with carbon monoxide, had not escaped freely but had been pocketed under the tightly drawn tarpaulin. The next day all members of the crew were back on the job, thanks to the timely first aid treatment.

In the motor vehicle department every effort is made to minimize accidents. As an incentive for the drivers of motor vehicles an automobile Stop Accident insignia award is made to a car after one year's driving without an operating accident of any kind. Some telephone men are now driving cars bearing insignia showing that they have had no accidents for three, four and even seven years.

The employees themselves are growing more interested in safety first measures as time goes on, and this is thought to be due largely to the plainly visible results and benefits. Lost time due to accidents in the entire organization, they report, has dropped from 8.44 per hundred employees in 1920 to 2.15 in 1925.

About Pumps

Handling the water supply of any manufacturing process is obviously done with pumps. Pumps are the special machines which have been devised for handling the relatively tremendous quantities of water which must be conveyed, frequently against high heads or equivalent pressures, in any process in which water is used at all.

There are all kinds of pumps beginning with the simple lift pump and its offspring the force pump, and going through all kinds of ramifications to the modern centrifugal pumps which pump incredible amounts per minute of all kinds of liquids. Engineeers are constantly adding to the sum of knowledge on the subject of pumping and their knowledge is always at the disposal of purchasers of pumps.

The paper mill man considers carefully the equipment with which he handles other materials than water. That greatest of paper mill material handling problems, the pumping of water, should have at all times his most careful attention. If installing new equipment he should be sure that he has a pump which gives him the maximum service with minimum power costs. If he has not recently checked the power figures on his present installations, test on the power consumed in pumping might indicate possibilities for tremendous savings.

New England business men will be interested to learn of the completion of one hundred and five miles of long distance telephone cable uniting Boston and Portland, Maine. This cable will aid in further speeding up of the service between Boston, substantially all points in New Hampshire east of the White Mountains, and the entire state of Maine. It will also mean more dependable service in that the cable is to a great extent stormproof. It is to be extended next year to Brunswick, Maine.

The Oakley Chemical Company, New York City, announces a reorganization with the new name of Oakite Products, Inc., a New York state corporation with $2,000,000 capital. The personnel of the management and field organization will remain the same. The general offices of Oakite Products, Inc., will continue to be at 22 Thames St., New York City, and the factory as heretofore at Bush Terminal, Brooklyn, N. Y.

Mr. Claude F. Chard, for several years Cleveland District sales manager of the Austin Company, was killed in an automobile accident on Friday, August 13th.

One superintendent recommends getting rid of pitch on the wire and couch roll by the use of a thick soap solution pasted onto the wire and allowed to stay on while the wire runs around a few times. After the solution has had time to act on the pitch, the wire is washed free of the soap and the pitch goes with it.

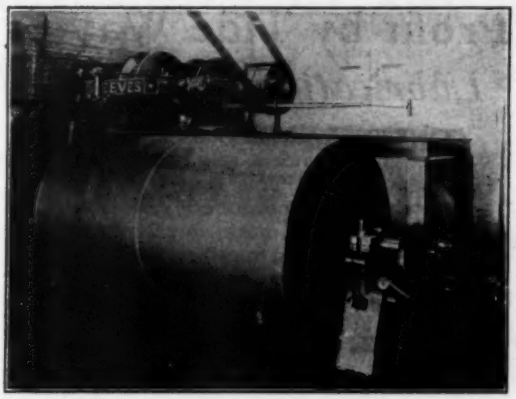

Photo shows a REEVES Transmission operating a Winder at the Cottalap Company, Sommerville, N. J.

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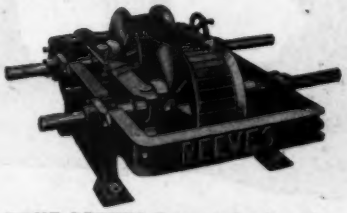

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Technical Developments in the Paper Industry

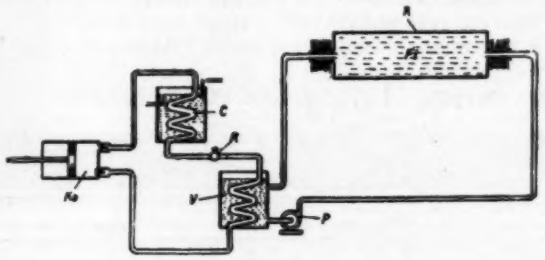
Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Moistening the Paper Web

THE moistening of the paper web is carried out for the most part by leading the web through moistening devices in which the water is sprayed, brushed on to the paper or else passed through an atmosphere of steam. Furthermore another common method is to make the paper web come in contact with two felts which have been saturated with water, so that either one or both sides of the paper web may be moistened.

All these processes have the disadvantage that the paper is more or less irregularly wetted down and hence a long time is required for the moisture in the paper to become uniformly



disseminated both over its surface and in its internal structure. However, it is known that this condition is absolutely essential for the production of the proper results in the calendering and finishing of high gloss papers. Hence the expediency is adopted of allowing the moistened papers to remain for a greater or lesser period of time in order to afford the moisture a chance to become equally distributed throughout the paper. However in the storage of the paper it is impossible to prevent the edges of the paper from drying out, as well as any other part that comes into contact with the air.

The new process, which is described in German Patent No. 429,017 and which is carried out by means of the apparatus which is shown in the accompanying illustration, avoids these difficulties. It was found that a uniform moistening of the paper was obtained when the latter was affected by the precipitation of the moisture that was contained in the air surrounding the paper. This was done by arranging for the cooling of a set of cooling rolls by artificial means to such a low temperature that the paper is cooled below the dewpoint of the air and then a precipitation of moisture on the surface of the paper results. This, of course, takes place in a uniform manner.

The degree of the wetting of the paper can be easily controlled by regulating the addition of air of suitable humidity and the temperature of the paper web. It therefore becomes unnecessary to roll up the moistened paper again and allow it to remain for a certain length of time in order to secure uniform distribution of the moisture through it, but the paper wet in this manner can be used directly in the finishing operations for the production of a high gloss.

The cylinder is cooled by means of a current of brine which has been cooled down to the proper temperature in a regular cooling apparatus, or else the cylinder may be connected direct to a refrigerator and cooled by means of the refrigerating fluid.

In the illustration (K) is the cooling cylinder on the paper making machine, (K_o) is the compressor, (C) the condenser, (V) the vaporizer and (R) the regulating valve of a refrigerating machine. The cooling liquid (Fl) is pumped into the cylinder (K) by means of the pump (P).

Tanning Extracts from Sulphite Waste Liquors

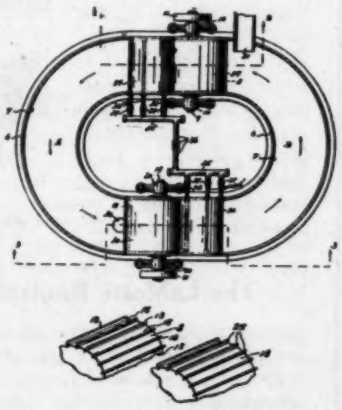
THE sulphite waste liquors are first sprayed in the form of a mist into the air for the purpose of removing the gaseous ingredients and also to oxidize certain other ingredients. Then the sprayed liquor is treated with alkaline earth metal oxide compound in sufficient amount to decompose the reversible sulphurous acid which is present in combination with the substances dissolved from wood to increase the elimination of sulphur as mono-sulphite. The basic liquor is then filtered in order to remove the insoluble constituents and the filtered liquor is concentrated. The concentrated liquors are treated with sulphuric acid for the purpose of converting the equivalent organic salts into corresponding organic acids, which are the tanning agents and to convert alkaline metal constituents equivalent to them into insoluble form, and finally the concentrated liquor is filtered in order to remove the insoluble ingredients. United States Patent, No. 1,592,062.

Treating Cellulose Waste Liquors

NON-HYGROSCOPIC pulverulent products are obtained by evaporating cellulose waste liquors at a temperature which is in excess of 100 degrees C., or by heating the liquors to a temperature above 100 degrees C. before evaporation. Alternatively, the solid material obtained in any manner from the liquors may be heated to a high temperature. British Patent, No. 250,956.

Pulp Beater

THE pulp beater, which is patented in United States Patent, No. 1,595,209, and which is shown in the accompanying figure, possesses an annular troughway shown at (A-B). The primary beater roll is seen at (29) and the secondary roll at (30), these rolls occupying positions diametrically opposite within the troughway. There is a bedplate beneath each roll and a backfall at the discharge side of each roll. The primary roll is disposed in a relatively wide spaced relation to its co-operating bedplate, while the secondary roll is closely spaced with respect to its co-operating bedplate. The primary roll is provided with a number of toothed fly-bars or knives, as may be seen at (12) in the illustration, while the knives on the secondary beater roll are of the straight edged type.



Wetting Spruce Wood with Calcium and Magnesium Bisulphite Liquors

WHEN wood shavings (44 x 2x7 mm) are shaken with bisulphite solution, containing 3.60 per cent sulphur dioxide and 0.959 per cent of magnesium oxide or 1.070 per cent of lime, at a temperature of 70 degrees C., the weight absorbed is 126 to 137 per cent after a period of three hours and 140 to 150 per cent after a period of eight hours. There

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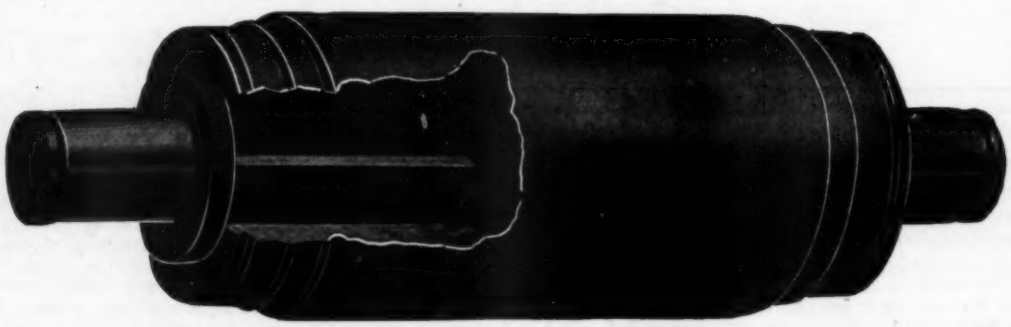

The Patented Spline shown above (an exclusive Perkins feature) prevents either the heads or the stock from turning on the shaft and thereby ruining the roll by working out a collar of the material from the body of the roll. ¶ The stock of our cotton, husk, and combination rolls is prepared by automatic mechanical processes (also distinctive Perkins features) which eliminate the variable "human equation" —processes in marked contrast to the old-fashioned method. ¶ With our methods the roll is built up as UNIFORM IN DENSITY AND STRENGTH as it could possibly be made. Moreover, the fibers lie radially from the center toward the periphery of the roll, which gives them GREATER RESISTANCE TO HEAT and LONGER WEARING QUALITIES. ¶ Perkins Calender Rolls are made in THE WORLD'S LARGEST CALENDER-ROLL PLANT.

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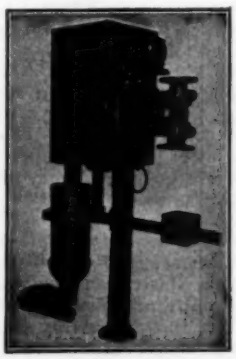

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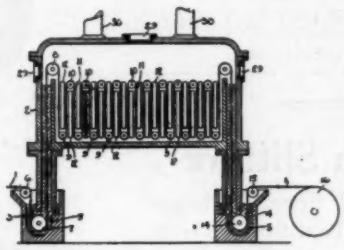
is not a significant difference between magnesium and calcium bisulphites. The unabsorbed solution is somewhat poorer in sulphurous acid and in base than the original liquor, even when allowance is made for loss of sulphur dioxide into the space above the liquid (which was filled with carbon dioxide to avoid oxidation) and for dilution by the moisture contained in the wood. Papierfabrikant, 1926, volume 24, pages 250-253.

Drying Continuous Paper Web

THE apparatus shown in the accompanying illustration exemplifies a method of drying the continuous paper web as it comes from the wet end of the paper making machine, or from a sizing vat, or from a coloring apparatus, coating machine or printing machine. This method consists of feeding the paper web in a continuous manner into and out of a vacuum chamber without breaking the vacuum and without sufficient tension on the web to cause its fibers to disarrange themselves from the interlaced position that they assumed on the wire of the paper making machine. This paper web is subjected to radiant heat from an electric heater. Thus the paper is dried with the fibers in the same interlaced position that they had when they left the wire. United States Patent, No. 1,595,235.

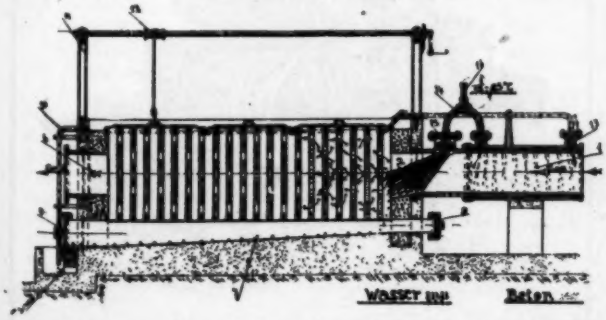


Making Sulphite Liquor

THE manufacture of sulphite liquor, as described in German Patent, No. 426,386, is carried out with the aid of a sulphur oven and cooling of the oven gases. The cooled gases often contain considerable amounts of selenium and arsenical substances, and hence give rise to difficulties in the manufacturing process. For, as is known, selenium has a bad effect on the quality of the pulp and the paper and is particularly bad in enhancing the formation of spots on the latter. For the purpose of removing the arsenical and selenium compounds, it has been found advisable to subject the furnace gases, as they come from the cooler, to the action of an electrical discharge apparatus. This treatment not only frees the gases from arsenic and selenium, but it also completely removes the sulphur trioxide from the sulphuric acid contents, and hence yields a gas which is perfectly pure and which is very well suited for the production of sulphite liquor. Inasmuch as sulphur trioxide cannot thus enter into the absorption towers, this process has the additional advantage in preventing the stoppage of the tower due to the formation of gypsum.

Sulphur Dioxide Gas Cooler for Digesters

THE ordinary type of cooler which is used for cooling the sulphur dioxide gases in the sulphite pulp mill requires as a general rule a considerable amount of circulating water. They are often large and occupy considerable space and at times give an acid water which is not at all desirable. Accordingly a new type of cooler has been designed and patented in German Patent, No. 428,219.



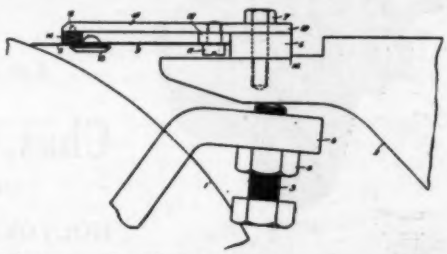
The main advantages of this cooler is that it occupies little room, gives good cooling, can be used for various purposes and requires but little attention. The apparatus is shown in the accompanying illustration.

The hot gases enter the washer through the pipe (1) and must pass through a current of water (2) in order to be perfectly free from dust when entering the cooler. The cooler itself consists of a long rectangular box in which a number of parallel plates are arranged at a definite distance from one another. These plates are easily removable. Each impact plate consists of a water inlet tube and an outlet tube so that cooling water is constantly running through the hollow plates. The stream of gas through the cooler is thus broken up and ample time is afforded for contact of the gases with the cooling surfaces. The cooled gas leaves through the outlet (6).

The stream of water which is used for washing the gases, shown at (2), runs off in the pipe (7). The hot water, which is obtained from the cooler runs off through the pipe (13) at the front end of the washer and made to come in contact with the hot gases at this point, is still further heated.

Doctor for Paper Making Machines

THE illustration shows the doctor carried in a proper device, which is adjacent to the roll on which this device acts. The doctor itself is made in the form of a flexible blade, which is carried directly on a resilient device which is inserted between the blade and the carrier. This arrangement allows the blade to conform to the irregularities that may be present in the surface of the roll. Means are also provided for making a water-tight joint between the blade and the carrier. United States Patent, No. 1,594,284.



Indicators for the Cellulose Industry

FREE sulphurous acid in sulphite liquors may be determined by titration with tenth normal solution of sodium hydroxide to the stage of hydrogen sulphite or of sulphite. For the former titration the best indicator is bromophenol-blue, which has a marked and sharp color change at the required pH (4.2). This titration is comparatively little affected by the other weak acids present, thus, carbonic acid, acetic and formic acids, and the amounts of calcium sulphite calculated from the titration are accurate within one per cent.

For titration to complete neutralization, thymolphthalein is a better indicator than phenolphthalein. With the latter the color change takes place at pH 8.2 instead of 9.3m which corresponds with exact neutralization. The end-point is also not very sharp and depends on the amounts of water and of indicator added. White liquor from sulphate cellulose manufacture may contain sodium hydroxide, sulphide, carbonate, sulphate and sulphite, and may be titrated with acid in three stages.

At pH 11 the sodium hydroxide and half the sodium sulphide are neutralized, at pH 9 half the sodium carbonate is also neutralized, and at pH 4 the sodium sulphide and carbonate are completely neutralized and also half the sulphite. The best indicators for the three stages are Nile blue, thymol blue and bromophenol blue respectively.

Frequently, the determination of sodium hydrosulphide by titration with iodine, and of sodium hydroxide by titration with hydrochloric acid in the presence of Nile blue, is sufficient. Mixtures of sodium hydrosulphide and sulphite may be analyzed by titration with iodine, followed by titration of the acid thus liberated. The acid liberated is equivalent to the iodine consumed in oxidizing sodium sulphite, and to half that consumed in oxidizing sodium hydrosulphide.

Two successive titrations of the same sample using different indicators are not recommended. It is preferable to take

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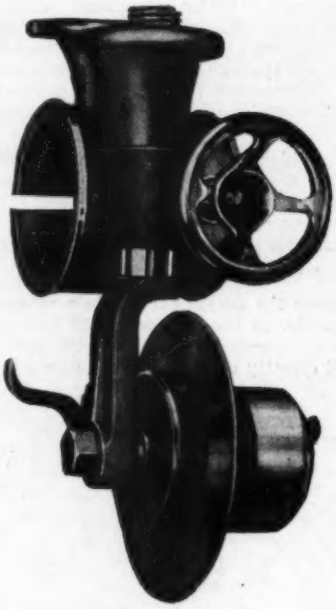

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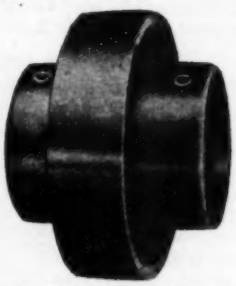

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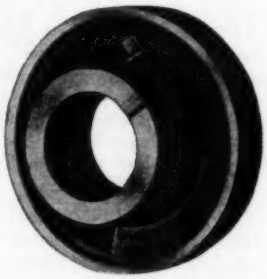

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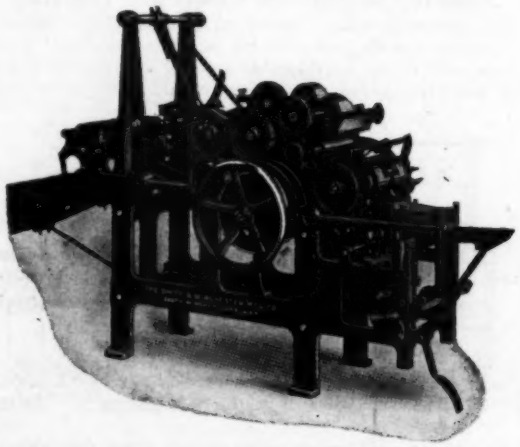


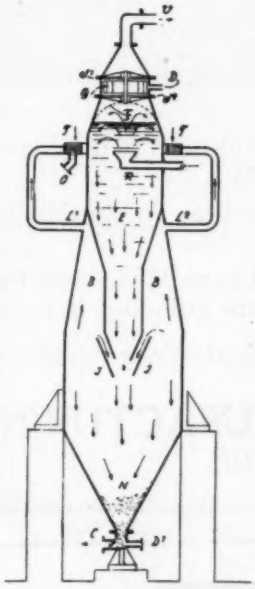
Paper Bag Making Machinery

separate samples for each titration. Titration of the supernatant liquor over a precipitate such as barium carbonate is also liable to yield inaccurate results.

For further information the reader is referred to the original article in Der Papierfabrikant, 1926, volume 24, pages 267-270, 285-288.

Save-All for Recovering Fiber and Filler Values from Waste Liquors

THE save-alls that are commonly used for this purpose generally possess the disadvantage that the fibers are caused to float on the surface of the liquor due to the presence of bubbles of air in them, with the result that they do not settle and are therefore lost. This disadvantage is counteracted in the apparatus that has been designed for this purpose and that has been presented for a German patent in application No. 944,984.



The apparatus consists of a system of tubes, cylinders, boxes and funnels which are subjected to a partial vacuum. The apparatus is shown in the accompanying illustration. The back water enters through the pipe (R) into the top compartment, wherein a suction action is exerted due to the vacuum pump connected at (V), or else by means of a pressure pump. The liquor hence reaches (E) in the form of a sprayed stream. At this point, the air is removed from the fibers, so that they become heavier than the liquor in which they are contained and sink quickly into the space (N) and finally settle. (B-B) is a tube through which the liquor descends so that the settling of the fibers and the fillers is accelerated. The suction action of the tube (B-B) may be enhanced by the funnel-shaped tube (J-J).

Under the vacuum dome (V) a turbine (G) is built into the apparatus, which is actuated by the difference in pressure. The turbine runs between the screens (S1) and (S2). The turbine produces a swirling effect in the upper space, which is very well suited for the removal of the air that is contained in the fibers. It also prevents the fibers from being drawn into the vacuum tube, in case the level of liquid rises too high in the apparatus. Under the turbine there is the screen (F) on the lower side of which the fibers settle and form a filter. Inasmuch motion prevails above and quiet below in this save-all, the de-aerated fibers with their filler content are quickly, regularly and completely settled out.

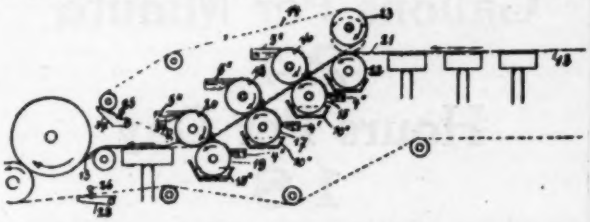
The effect of the vacuum may be enhanced by the addition of various chemicals, such as caustic soda, Glauber's salt and the introduction of steam. The apparatus works in a continuous fashion. The purified water rises with its fiber values removed through the tube or annular space (L1) and (L2) and then can be withdrawn at will.

This new apparatus is of small dimensions, but can handle considerable volumes of liquor. Thus, for example, for a paper making machine with a daily production of 10,000 kilograms of paper, a vacuum save-all of fifty cubic meters capacity is all that is necessary to take care of one cubic meter of water per minute. Inasmuch as a cubic meter of waste liquor contains on the average 0.4 to 0.6 kilogram of air dried paper fibers and from 800 to 1,200 cubic meters of waste liquors are worked up in a day's time, the great advantage of this apparatus is clearly demonstrated.

Sizing, Dyeing and Impregnating Paper Webs in and out of the Papermaking Machine

IN THE sizing and coloring of the paper mass in the beaters, there are often considerable losses of time and of materials, due to the fact that some of fillers, sizing agents and coloring matters are lost in the wash waters. To overcome this difficulty a process has been invented and patented in German Patent, No. 427,531, in which these operations are carried out not in the mass but on the paper web itself either in or out of the paper making machine.

The illustration shows the manner in which the process is applied. It represents a part of the wire end of the ma-

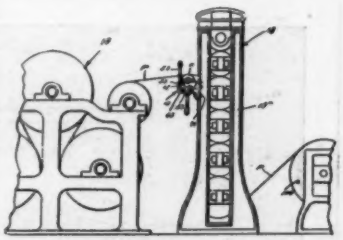


chine with the impregnating device built into it. This simply means the incorporation of pairs of impregnating rolls in the wire end of the machine. There are two wires, one the ordinary Fourdrinier wire, seen at (13), and then another wire, located over this one, at (14). Three pairs of impregnating rollers are located at (15), (16) and (17) and (18), (19), and (20). The paper web (21) runs between the two wires. Thus the paper web is impregnated with milk of rosin with the aid of the impregnating rollers (15) and (16), with coloring matter by means of the rollers (17) and (18), and finally, in order to fix both these substances on the paper fibers, with alum solution by means of the rollers (19) and (20).

The pairs of rollers are all provided with troughs (4") and (5"), and also with run-off troughs (10"). An air spraying tube is located under the wire (14) in order to loosen up the paper web from the wire. Other spraying tubes are also located at (25) and (26).

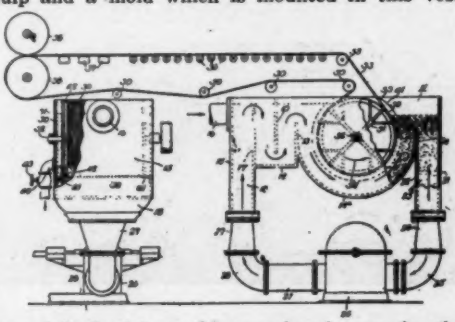
Oil Paper

THE apparatus which is shown in the accompanying illustration is patented in United States Patent, No. 1,593,128. It is used for the purpose of making an oiled paper. It consists essentially of a paper roll (19), which is arranged in front of a calender and of an oiling device. The latter consists of a trough in which the oil is kept and a roller which turns in the trough and comes in contact with the paper. In order to secure constant results, it is necessary to keep the oil at the same consistency throughout, and this is done by means of a heating device in the form of a steam coil which is placed in the oil trough.



Paper Making Apparatus

THE illustration shows an apparatus for the manufacture of paper, which consists of a vessel for containing the fluid pulp and a mold which is mounted in this vessel. A



pair of conduits lead from this vessel and serve for the addition and the removal of the liquid pulp to it. Means are provided for making the pulp stock flow from this vessel through one of the conduits and back through the vessel to

850
Gallons Per Minute
24
Hours Per Day
18
Months—

This is the record of the Layne Well operated by the Hammond Bag & Paper Co., Wellsburg, W. Va.

The Layne Pump in this well has been in continuous operation without repairs or adjustments.

This instance is characteristic of Layne Wells and Pumps and is not unusual. Other paper mills are enjoying like results.

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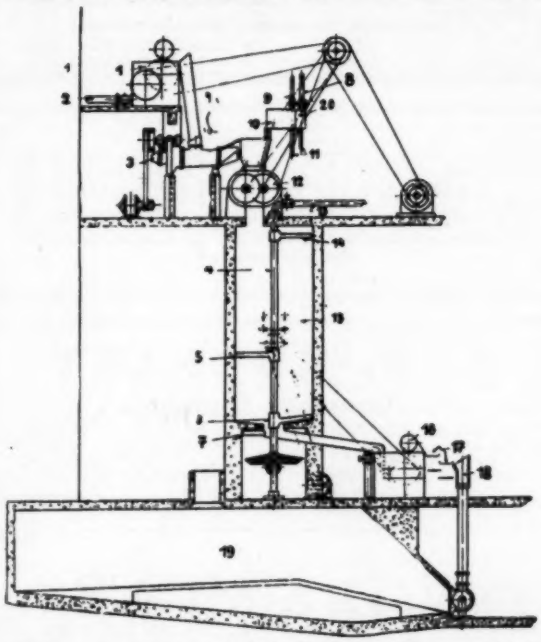
the other conduit. Means are also provided for making the pulp assume a zigzag path before it reaches the mold. United States Patent, No. 1,594,473.

New Bleaching Process

THE new bleaching process, which is described in Papir-Journalen number 7, 1926, and which is also abstracted in Zellstoff und Papier, 1926, pages 261-3, is shown in the accompanying illustration. Referring to the figure, (1) is a dehydrating drum, 40x130 inches, for concentrating the stock to a density of 7 per cent. The stock from the screening devices used in the plant is shown at (2). The concentrator is indicated at (3) and this dehydrates the stock up to 40 per cent dry content. A hollow shaft is indicated at (4) and this shaft rotates at a speed of approximately one-third of a



revolution per minute. At (5) there is an arm which is provided with perforations for the purpose of distributing air throughout the stock. Another arm at (6), attached to the same shaft, helps the stock to run out of the outlet. Water is added to the apparatus through the water inlet at (7), and another inlet is provided at (8) for introducing hot water, while that at (9) serves for the introduction of the bleach liquor. The measuring vessel at (20) is for warm water and that at (10) for the bleach liquor. An overflow is located at (11). The mixing apparatus, which mixes the stock and water and the bleach liquor, is indicated at (12). The air inlet is seen at (13) and at (14) is located the stirring arm for agitating the stock. The bleach tower is at (15) and (16) represents the dehydrating apparatus which removes sufficient water from the stock so as to bring it up to the proper consistency for addition to the bleaching beater. At (17) there is seen the transporting device and at (18) the outlet pipe to the beater.

The apparatus is worked in the following manner: The unbleached stock, which comes from the strainers, is dehydrated by means of suitable dehydrating cylinders, provided with press rollers, to a consistency of approximately 7 to 9 per cent, and then the dehydrated stock, directly that the doctor has removed it from the press roller, is introduced into a screw press. The screw press dehydrates the stock until its water content is reduced to about 65 per cent. From these presses the stock is next carried to a mixing apparatus which is constructed similarly to the well-known pulp separators. There are two rotating shafts with agitating arms in this apparatus. The stock is defibrated in this apparatus and mixed with the bleach liquor and warm water. The stock must remain but for a short time in this apparatus so that a strong mechanical working up of the fibers does not take place at this point.

From the measuring apparatus, which is located over the mixing apparatus, a constant flow of bleach liquor and warm water enters the mixing apparatus. The ratio of bleach liquor to warm water is so regulated that the mixture reaches the bleach tower with a temperature of approximately 20 degrees C. The bleach tower has a circular cross-section. There are various openings in its side through which samples are withdrawn for test. This makes it possible to follow through the entire operation from beginning to finish. The rotary vertical shaft in the center of the tower makes a revolution every three minutes. The upper agitating arm attached to this shaft serves to agitate the stock, the arm located at the middle of the tower is provided with perforations through which air at one atmosphere pressure is blown into the tower and the lower arm acts as a sort of doctor and assists the bleached stock to leave the tower.

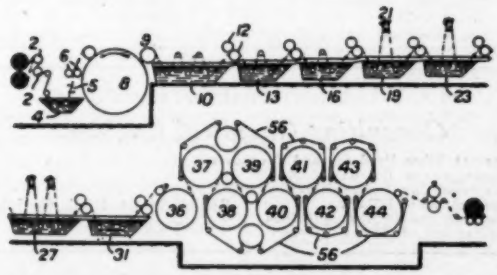
Directly after the stock leaves the tower it is diluted with water and then washed again. This finishes the first stage of the bleaching operation, and the stock is then sent to the dehydrating machines and new bleach liquor is added and the second stage of the bleaching, or after-bleaching, starts. This part of the process is carried out in ordinary beater or in a second bleach tower which is constructed similarly to the first tower.

It is claimed that this process entails a saving of 30 to 40 per cent in chlorine, 50 per cent in steam and 30 per cent in time.

Waterproofing Paper

IN THE process of waterproofing paper by treatment with concentrated solutions of chlorides, such as those of zinc, aluminum, calcium and strontium, the material is dried by heat before treatment with the solutions and subsequently heated to mature the amyloid formed by the solution treatment and cooled to prevent degeneration of the same.

In British Patent, No. 251,126, there is described an appa-



ratus for carrying out the process in a continuous manner. This apparatus is shown in the accompanying illustration. It comprises the heated drums (2), a chloride bath (4), scrapers (5) and pressure rollers (6) for removing the superfluous solution. There is also another heated drum (8), a cooling drum (9) and lixiviating baths (10) (13) and (16), for the recovery of the salt solution. The paper web is then passed through the washing baths (19) (23) and (27) and then through a color bath (31). It then goes through a series of drying drums (37) to (44) and also cooling drums.

Squeeze rollers (12) are provided in connection with each of the lixiviating and washing baths. Spraying tubes (21) direct water against both sides of the material as it passes over the rollers above the washing baths. The webs are guided over the drying rollers by the endless belts (56).

Carbonizing Sulphite Liquors with Mordant Salt Solutions

THE article contained in Zellstoff und Papier, 1926, volume 6, page 113, discusses the carbonization of sulphite cellulose waste liquors with mordant salt solutions. The liquor is preferably previously concentrated and is then treated with ferric, aluminum or chromium sulphate and heated for a period of two hours at a temperature of 180 degrees C and ten atmospheres pressure. The organic matter is completely carbonized by this treatment and the liquor is colorless and free from organic substances. The carbon, which is obtained in this manner, contains, however, 50 per cent of ash and is almost incombustible.

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New York, September 1, 1926.

FROM a general standpoint, the market for paper is comparatively active. It is quite true demand has subsided for most classes of paper in many quarters during the "dog days" of the summer, yet business has kept up in satisfactory volume, according to a majority of reports, while during the last few days of August there has been a marked revival of consuming interest recorded in this important paper center. Buyers continue to operate chiefly on a hand-to-mouth scale, purchasing today what they require tomorrow—so to speak—but indications are needs are increasing in a manner making it necessary for many paper consumers to place larger orders, thus accounting for the livelier market condition than prevailed several weeks ago.

The outlook for a busy fall and winter is most promising. Not in a long time has the paper industry been characterized by such healthy conditions as now obtain. Signs point to very little accumulation of supplies in any quarter; buying for months past has been against direct wants, consumers and jobbers alike endeavoring to keep stocks down; mills also have in most cases refrained from making up paper for stock except as has been actually necessary, and prospects for an excellent demand during the next few months are indeed bright. General business is healthy and good in fact, statistics relating to carloadings, bank clearances, industrial production, etc., go to show the country is in a prosperous and busy state, which, if true at this season, certainly should become more pronounced later in the year when the vacation period is over and the business fraternity settles down for more concerted action.

There have been spots in the market where decided improvement has been witnessed. The movement of certain kinds of paper within the last couple of weeks has increased appreciably, and in some paper specialties demand has expanded to a degree where the trade has acquired a much livelier aspect. The more important classes of paper are enjoying considerable market activity. There has been the customary summer reaction in business, based on a smaller consumption in various localities, but by and large business in paper this summer has been fully up to what is regarded as a normal level and doubtless exceeding to some extent normalcy.

Reports from mill centers tell of increasing activity, which reflects the broadening of the paper movement in such large consuming markets as New York City. It has been necessary for some manufacturers to speed up production to take care of the growing demand; it is stated on good authority that most paper and board mills have orders on file which will keep them well engaged for quite a while ahead. Soon after Labor Day the usual autumn stimulation of demand should occur, and if the increase in buying this fall reaches that in the similar period in previous years, the industry should experience one of the busiest times in its history.

The monthly statistical report of the American Paper and Pulp Association and affiliated organizations shows that during June total production of paper and board in the United States amounted to 572,968 net tons, a gain of about 3 per cent over the 555,696 tons produced by identical mills in the preceding month. June production also compared with 573,528 tons in April, 599,719 tons in March, 523,657 tons in February, and 548,820 tons in January. All grades, with three exceptions, showed an increase in output in June over May. Stocks of paper at mills gained during June, totaling 258,149 tons at the end of that month, contrasted with 241,031 tons at the end of May. Shipments from mills aggregated 556,868 tons, against 546,052 tons in May.

Production of newsprint in the United States and Canada reached a new high level during July, according to the report of the News Print Service Bureau. During July U. S. mills produced 140,516 tons of newsprint and shipped 142,690 tons, while Canadian mills manufactured 163,037 tons and shipped 161,824 tons, making a total for both countries of 303,553 tons produced and 304,514 tons shipped. This output was a little larger than in June, when both countries produced 300,767 tons. During July, U. S. mills operated at 95 per cent of rated capacity and the Canadian mills at 99 per cent. Stocks of newsprint at producing mills at the end of July totaled 29,487 tons for both the U. S. and Canada, which was equivalent to 2.5 days' average production, and compared with 30,647 tons at the end of June.

Production of newsprint in the United States in the first seven months of this year amounted to 984,599 tons, and in Canada to 1,056,790 tons, making a combined total of 2,041,389 tons, contrasted with 1,753,889 tons in the same period last year, 1,667,724 tons two years ago, and 1,611,931 tons three years ago. The U. S. mills made 11 per cent more newsprint in the first seven months of 1926 than in the similar period last year, while the Canadian mills made 22 per cent more, the combined output of the two countries being 16 per cent above that of the corresponding time a year ago.

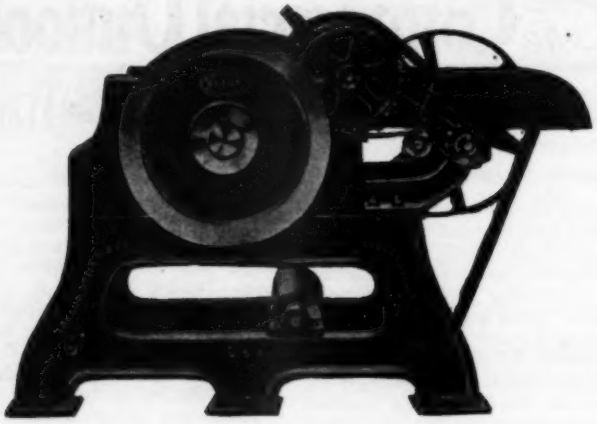
The monthly statistical summary of the paper board industry compiled and issued by the Department of Commerce in Washington puts the total production of board in the United States during July at 209,961 tons, compared with 218,555 tons produced in the preceding month. Board mills operated at 107.9 per cent of their rated capacity in July, against 108.1 per cent in June, working a total of 8,607,891 inch hours, contrasted with 9,036,327 inch hours in June. Orders received for board by mills during July totaled 211,907 tons, compared with 238,836 tons in the preceding month, while unfilled orders held by manufacturers at the end of July called for 122,667 tons of board, against 109,437 tons at the end of June. Shipments of board from mills aggregated 209,538 tons during July, contrasted with 212,741 tons in June, and stocks of board at mills at the end of July totaled 59,086 tons, against 57,416 tons at the end of the preceding month. Board mills consumed 200,927 tons of waste paper in July, compared with 208,728 tons in June, and had stocks amounting to 147,523 tons at the close of June, against 136,380 tons a month previous.

The price tone in newsprint is very firm. Little or nothing is heard in the trade regarding the probability of any change in the contract basis during the remainder of this year; in fact, the trade seems to feel prices will be maintained fully in spite of the bearish factor of an appreciably large additional tonnage which is due to come onto the market. Publishers are consuming newsprint in exceptionally heavy amounts; not only are the well-established dailies all over the country printing larger issues and gaining circulation but popularity of the new-style tabloid newspapers in many cities has led to a big increase in print paper consumption.

Coarse papers are moving freely and in gradually increasing amounts. The price condition is firm, with kraft holding at the advance of a few weeks ago and other wrapping displaying price strength. Demand for kraft from converters has been especially satisfying to manufacturers, while a larger movement is looked for in the retailing trades from now on.

Fine papers are in somewhat limited demand, but there has been a slight improvement in the market and further expansion of business is expected in the early autumn. Prices are maintained on firm levels and the tendency is upward. Tissue is moving in fair volume and there is a strong advancing tendency noted in prices. Book paper is wanted in steady volume, particularly on contract, and quotations are firm.

More demand is noted for most kinds of box board. Reports say the market in the Middle West has improved to a marked degree, and in New York consumers are gradually increasing their buying. Prices are steady at last reported levels.



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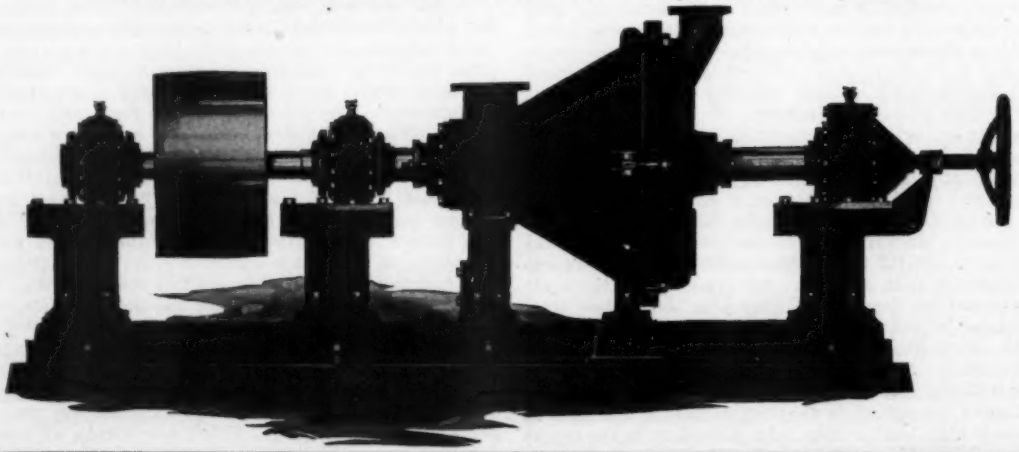


Domestic Raw Materials

Papermaking Rags

This is the dull season in papermaking rags and the market during the last month has lived up to its reputation for the midsummer period. There has been very little display of activity of any character in any part of the trade. Buyers have come into evidence in an off and on manner when in urgent need of supplies, but have confined their purchases to rags directly required, and a large majority of sales have involved small lots. The situation has been very much in favor of buyers in fact, the market is still altogether a buyers' market, and signs are it will require quite a good deal of buying activity to cause the condition to turn around to where sellers would have the upper hand.

Notwithstanding the slow demand from nearly all consuming quarters, prices have held surprisingly steady. The undertone has been easy and yet market levels have changed but slightly. The reason for this, it would seem, is that rags have declined fairly sharply in value, most grades at any rate, and dealers therefore put up considerable resistance to any further recession in prices, even though they are accomplishing restricted sales. This is particularly true as regards the low qualities, which have ruled noticeably steady over the last few weeks despite their limited movement into consuming channels. Dealers seem to consider that a narrow demand at this season is to be expected and therefore are not pressing mill customers, also the feeling concerning the future is optimistic, most of those on the selling side of the trade expecting much improvement in demand in the fall and consequently are not making undue effort at this time to effect sales.

It appears perfectly true that available supplies of domestic rags of most classes are small, subnormally so. The use of household rags for the family automobile, and the tremendous increase in consumption of rags for wiping purposes all over the country are factors in this situation; furthermore market price levels of rags in recent months have been such as to discourage collections throughout the country. This condition, however, is easily offset by the very heavy imports of papermaking rags into the United States from numerous other countries. During the last two years imports have just about been double the tonnage formerly viewed as normal receipts from abroad. Were it not for the big gain in importations there is no saying at what prices rags for papermaking purposes would have sold. As matters are, so many rags are coming into the country from outside sources that instead of a scarcity existing somewhat of a surplus supply situation prevails, and it would appear that in the future our paper mills will have to depend much more on foreign rags than was the case up to a couple of years ago.

Roofing stock is steady in price although business in this class of rags during the past month has been exceedingly spotty, and of small volume. Felt paper manufacturers experienced a falling off in demand for their product a few weeks ago and therefore were enabled to let down in their buying of rags, especially since they had bought up stock in sizable tonnage for forward shipment from abroad and from domestic sources. Dealers put stress on the unprofitable level of prevailing prices, however, and are maintaining quotations fairly well. No. 1 domestic roofing rags are selling at around 1.70 cents per pound f. o. b. shipping points, and No. 2 stock at 1.35 cents. Foreign dark cottons are bringing around 1.55 cents a pound ex dock Atlantic ports, and foreign linsey garments around 1.65 cents.

New cuttings seem to have setled at steadier price levels. Demand is very spotty and chiefly for small quantities but strikes in the clothing industry have reduced production and served to sustain cutting values, and it is the contention of dealers that any increase in buying by paper mills would send prices higher. No. 1 white shirt cuttings are quoted at 12 to 12.25 cents per pound at dealers' shipping points, fancy shirt cuttings at 6 cents, washables at 4.75 cents, blue overall cuttings at 7.75 to 8 cents, light silesias at 7.75 cents, white lawns at 9.25 cents, and unbleached muslins at 12 cents.

Old white cottons are in limited demand, but quoted prices show little change, dealers asking around 6.50 cents at shipping points for No. 1 repacked and 3.50 cents for No. 2 repacked whites. Repacked thirds and blues are available at 2.50 to 2.75 cents per pound at shipping points, and rough blues at around 1.75 cents.

Foreign rags are selling in an occasional way and in small lots. There has been some demand for linens, and foreign roofing rags have moved fairly freely against old commitments.

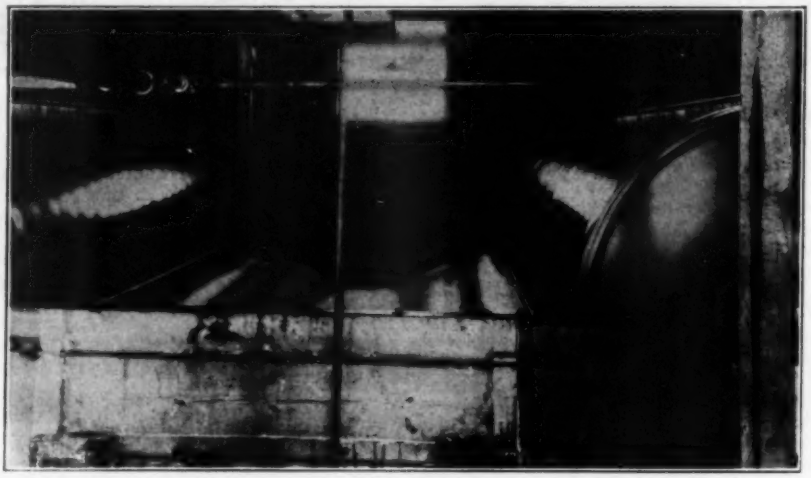
Average quotations f. o. b. shipping points and ex dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	12.00-12.25
White shirt cuttings, No. 2	8.25- 8.75
Fancy shirt cuttings	6.00- 6.25
Washables, No. 1	4.75- 5.00
Unbleached muslins	12.00-12.25
White lawns	9.25- 9.50
Overall cuttings, blue	7.75- 8.00
Black silesias	5.00- 5.25
Light flannelettes	9.50- 9.75
Canton flannels, bleached	9.50- 9.75
Canton flannels, unbleached	8.50- 8.75
Shoe cuttings, bleached	10.50-11.00
Shoe cuttings, unbleached	9.50-10.00
Light silesias	7.75- 8.00
O. D. khaki cuttings	6.00- 6.25
Mixed khaki cuttings	5.25- 5.50
Corduroy cuttings	4.00- 4.25
Cottonade cuttings	4.00- 4.25
Linens, No. 1 white, foreign	13.00-13.50
Light prints, foreign	2.75- 3.00
Old Stock—	
Whites, No. 1 repacked	6.25- 6.75
Whites, No. 2 repacked	3.25- 3.75
Whites, house soiled	2.25- 2.50
Whites, street soiled	2.00- 2.25
Lace curtains	6.25- 6.50
Thirds and blues, rough	1.65- 1.85
Thirds and blues, repacked	2.50- 2.75
Black stockings	4.00- 4.25
Cotton canvas, No. 1	5.50- 5.75
White cotton batting	3.25- 3.50
Roofing, No. 1	1.65- 1.75
Roofing, No. 2	1.30- 1.40
Linsey garments, foreign	1.60- 1.70
Dark colored cottons, foreign	1.50- 1.60
Blue linens, foreign	4.00- 4.25
Gray linens, foreign	4.25- 4.50
White linens, foreign	8.00- 8.50
Light prints, extra, foreign	1.75- 2.00

Rope and Bagging

Paper mills are reported absorbing domestic old rope in moderately consistent fashion, yet it is evident current buying does not measure up to the volume of busier periods of the year. The fact that old rope is coming forward from producing and collecting sources in limited amounts, however, helps to sustain market values and to give prices a fairly firm undertone, especially since consumers are placing orders which serve to remove the great bulk of supply reaching the market. Prices of No. 1 domestic manila rope are around

THE NORTH WATER FILTER



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Save-Alls Stone Bed Plates

See Page 347 in the 1926 Paper and Pulp Mill Catalogue.

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Giving the Beater a Lift

The operation of a beater, with its wear and tear and tremendous power consumption, has one primary purpose, namely, hydration. Any thing that will economically bring about hydration more quickly relieves the beater just that much, cuts down on operating costs and speeds the process of paper making.

The MITTS & MERRILL SHEET & LAP STOCK SHREDDER performs on magazines, books, old paper and boxboard, frozen or dried pulp laps in such a way as to greatly reduce their resistance to hydration when they reach the beater. It gives the beater an economical lift.

Our Shredders are built in sizes with spouts ranging from 18″ to 45″ wide. We will be glad to quote you on any size adapted to your requirements.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

See pages 378 and 379 in the Paper and Pulp Mill Catalogue

MITTS & MERRILL 1013 Tilden St. SAGINAW, MICH.

5.25 cents a pound at shipping points perhaps some purchases have been made a trifle under this level, but dealers generally hold fairly firmly for at least this figure. Foreign rope is relatively well below the domestic article and is bringing only about 4.25 cents a pound ex dock New York. Strings of all kinds are in slow demand and tending lower in price.

Routine demand is observed for old bagging. Prices have eased slightly to where No. 1 scrap burlap has sold to paper mills at 2.15 cents a pound at dealers' shipping points, but 2.25 cents usually is asked, particularly when desirable packing is concerned. Roofing bagging is quoted at 1.25 cents per pound at shipping points. Foreign gunny bagging has declined, owing in part to the fumigation regulations of the U. S. Government. Dealers quote 3 cents ex dock New York for No. 1 imported gunny, but demand 3.50 cents and higher for domestic stock.

F. o. b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	3.50-3.75
Gunny, No. 1 foreign	3.00-3.25
Scrap bagging, No. 1	2.15-2.25
Roofing bagging	1.20-1.30
Wool tares, heavy	3.50-3.75
Wool tares, light	3.25-3.50
Manila rope, No. 1 foreign	4.00-4.25
Manila rope, No. 1 domestic	5.00-5.25
Sisal strings	2.25-2.50
Mixed strings	1.40-1.60

Pulp Wood

The market for pulp wood is exhibiting fair activity for this period of the year. Consumers are buying freely and the price tone is steady. The movement on contracts keeps up in good volume, and the trade is looking forward to an excellent season. Sellers are maintaining quotations, with no changes of importance noted.

Exports of pulp wood from Canada—practically all of which came to the United States—during the first seven months of this year amounted to 797,631 cords, valued at $7,754,977, showing an appreciable decrease from the 919,108 cords of a value of $8,972,358 exported from the Dominion in the same time a year ago.

Old Paper

The market for old paper has strengthened to a pronounced degree. Around the middle of August box board manufacturers came into evidence to buy on a larger scale, and prices responded at once, those grades used chiefly by board mills advancing some $2 to $3 a ton within a few days' time. Western mills sought supplies in New York and prices in the East rose quickly, and since then market levels have been well maintained at the advance. The high qualities have recorded little change of note but the tendency is firmer and certain grades which have been in more or less limited supply have stiffened a bit in value.

No. 1 mixed paper is now quoted at a minimum of about 55 cents a hundred pounds in the East f. o. b. shipping points, while in the West substantially above this price is demanded or up around 70 cents. Folded newspapers are up to a price range of 65 to 80 cents per hundred pounds, depending on the shipping source, while common mixed paper is quoted at 40 to 50 cents, overissue news at 75 to 90 cents, and No. 1 manilas at 85 to 95 cents. Shavings are firm at around 3.60 cents per pound at shipping points for No. 1 hard white, and 2.90 cents for No. 1 soft white shavings. There has been a particularly good call for one-cut shavings, and attractive premiums in price have been offered by mills for such stock. Heavy flat books and magazines are selling at 1.05 to 1.15 cents a pound, old No. 1 kraft paper at 1.85 to 2 cents, and white blank news at 1.80 to 1.85 cents.

The following are quotations named by dealers f. o. b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	3.40-3.60
Hard white shavings, No. 2	3.00-3.25
Soft white shavings	2.80-3.00

GDC

IF YOU are confronted with special color problems such as fastness to light, fastness to alkali or soap; or if you have two-sidedness-troubles of delicate shades, let our newly equipped laboratories assist you.

230 Fifth Avenue
New York, N. Y.

GENERAL DYESTUFF CORPORATION

JOSEPH GATTI • President and Treasurer

GATTI Paper Stock Corporation

Formerly with the Gatti-McQuade Co.

Paper Manufacturers' Supplies

COTTON AND WOOLEN WASTE

All Grades of Rags and Paper Stock, New Wrapping Paper, Box Board and Cordage

Main Office
41 East 42nd St., New York
Liggett Bldg.

Packing House
13th and Monroe Sts.
Hoboken, N. J.

Western Paper Makers Chemical Company

Paper Makers Chemical Company

Kalamazoo, Mich. Holyoke, Mass. Easton, Pa.
Jacksonville, Fla. Pensacola, Fla. St. Austell, England

Rosin Size, Satin White, Clays, Fillers
Foam Killer, Felt Soap and Other Specialties

Watson, Frye Company
BATH, MAINE

Manufacturers of

Wood Pulp Grinders with 3 and 4 pockets. All Sizes.

Wet Machines, Deckers, also Combination, Wet Machines and Deckers.

Diaphragm Screens, Six to Eighteen Plate, inclusive.

Also

Union Wet Machines for Sulphite and Sulphate Pulp, 30 tons production Extra Dry.

Chippers, 48″, 84″, and 90″ with 3 and 4 knives.

Cylinder moulds all sizes.

Bronze and Lead Fittings, for sulphite mills, and also all kinds of Iron, Brass, Bronze, and Composition Castings.

The survival of the fittest

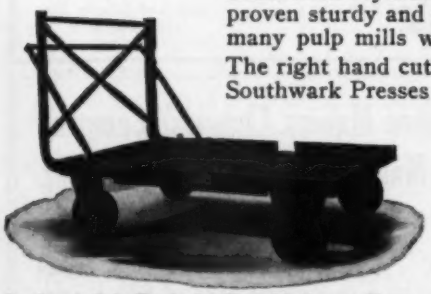
The easiest way to survive competition is to reduce the cost of production.

Our equipment will help you to do this:

Jenssen Acid Towers
Jenssen Spray Coolers
Bullard Gas Washer
Decker Cooking Process
Kamyr Feltless Wet Machine

G. D. Jenssen Co.
200 Fifth Ave., New York City

SOUTHWARK HYDRAULIC PRESSES
for Pulp, Sulphite, Baling, Etc.
HYDRAULIC PUMPS, VALVES, FITTINGS, SHOCK ABSORBERS, PULP TRUCKS, ETC.



Southwark Pulp Truck, for Use with Presses Shown at the Right. Saves Time and Labor

Southwark Hydraulic Presses for dehydrating pulp have proven sturdy and efficient machines in every one of the many pulp mills where we have installed them.

The right hand cut shows an installation of four 600-ton Southwark Presses in a large pulp and paper mill. These presses are designed for use with Southwark Pulp Trucks, the trucks are loaded and run under the press, the pulp being compressed directly on the truck.

This feature gives fast operation, saves labor and eliminates curbs, boxes or other containers on the press.

Four 600-Ton Southwark Pulp Presses, Minnesota & Ontario Paper Co., International Falls, Minn.

SOUTHWARK FOUNDRY AND MACHINE CO.

AKRON, O.
100 E. South St.

400 Washington Ave.
PHILADELPHIA, PA.

CHICAGO
343 S. Dearborn St.

Colored shavings	.90-1.00
Heavy book, No. 1	1.05-1.15
Crumpled book, No. 1	.85- .95
Ledger stock	1.50-1.75
Kraft, No. 1	1.85-2.00
Manilas, No. 1	.85- .95
White blank news	1.80-1.90
Overissue news, No. 1	.75- .90
Folded news	.65- .80
Sulphite mill wrappings	.80- .90
Mixed paper, No. 1	.55- .70
Common paper	.40- .50

Mechanical Pulp

Mechanical pulp is in rather slow demand, insofar as current buying is concerned. Transient buyers are absorbing supplies merely in a routine way while contract purchasers are getting along with shipments against back commitments in a manner precluding the necessity of engaging in much additional buying at the moment. There is, however, a steady and voluminous movement against contracts and back orders; grinders appear to have little pulp which they are anxious to dispose of as they are conserving supplies against their own forward requirements, and prices are ruling quite steady —the market situation generally is healthy and firm.

There is limited tonnage of domestic ground wood available in the open market; in fact, reports state domestic producers with few exceptions are offering practically no supply for outside sale. As proof of the assertion that American consumers who depend on open market purchasing to cover their needs are now securing most of their ground wood from Canada, exports from the Dominion during the first seven months of this year totaled 195,833 tons, recording a big increase over the 163,180 tons exported in the corresponding time a year ago, nearly all of which was shipped to the United States. Most Canadian grinders at present are well sold ahead, for at least a month or two, and this is a strengthening market factor.

Domestic spruce ground wood is quoted at around $32 a ton f. o. b. pulp mills while quotations from Canada range between $29 and $30 at shipping points. Scandinavian ground wood is above a price parity with the market here, costing in the vicinity of $38 to $39 a ton ex dock American Atlantic ports for dry ground wood.

Chemical Pulp

A little more inquiry has developed for domestic chemical pulp during the past few days and the market undertone seems a bit livelier with buying of appreciable volume apparently pending. Consumers, however, have proceeded rather carefully recently in ordering supplies, one reason for this presumably being the dull season has permitted them to hold off buying because of being in less need of pulp with shipments against back orders coming along regularly. Prices are steady to firm. Most manufacturers are reported well fixed with orders which will absorb the bulk of their production over the next several months, and there is no anxiety to sell indicated; rather producers look for a firm pulp market during the coming winter and therefore are satisfied to wait until later in the year to enter further engagements. It is appreciated that should the tie-up of the pulp industry in Norway continue for any length of time, as it seems likely to, the effect would be to increase demand for domestic and Canadian pulps and probably cause an advance in prices.

Bleached sulphite is quoted at 4 to 4.25 cents per pound f. o. b. pulp mills for the most popular grades, with other qualities ranging in price up to 4.75 cents. No. 1 strong unbleached sulphite is quoted at around 3 cents at producing points, and book grade sulphite at 3.25 to 3.50 cents. Bleached soda pulp is priced from 3.75 to 4 cents at pulp plants, and No. 1 kraft at an average of 3 cents.

Production of pulp in the United States in June totaled 214,423 tons of all grades, of which 105,910 tons were ground wood, recording a decrease of 7 per cent from the total of 224,257 tons produced in the preceding month. Mill stocks at the end of June amounted to 20,097 tons of chemical pulp and 156,323 tons of mechanical, against 18,641 tons and 148,360 tons, respectively, at the end of May.

Quotations f. o. b. pulp mills are as follows:

SOLVAY
STANDARD IN SODA SINCE 1881
Quality and Service Guaranteed by the Largest Source of Supply
Soda Ash
Caustic Soda
Over 75 stock distributing points assure prompt shipment with minimum transportation charges.
The Solvay Process Co.
Detroit, Mich.; SYRACUSE, N. Y.; Hutchinson, Kas.
Sales Department
WING & EVANS, Inc.
40 Rector Street, New York
Boston Cincinnati Cleveland Detroit Pittsburgh
Chicago Syracuse Indianapolis
Philadelphia St. Louis Kansas City

A MARK OF RESPONSIBILITY ON PRODUCTS OF STANDARD QUALITY
ALUMINUM SULPHATE
The General Chemical Company manufactures to standards of purity and uniformity nowhere excelled—standards which are identical in each of the Company's many plants. Wherever you are, the chemicals you receive are of standardized General Chemical quality.
GENERAL CHEMICAL COMPANY
40 RECTOR ST., NEW YORK
Cable Address, Lyonsdet, N.Y.
BALTIMORE · BUFFALO · CHICAGO · CLEVELAND · DENVER · EASTON
LOS ANGELES · PHILADELPHIA · PITTSBURGH · PROVIDENCE · SAN FRANCISCO · ST. LOUIS
THE NICHOLS CHEMICAL CO., LTD., MONTREAL

INTERNATIONAL

SALT CRYSTALS

Water Softener Efficiency

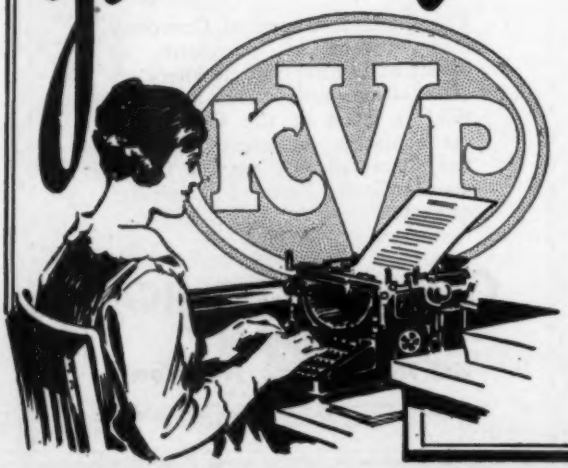
is dependent upon constant regeneration thru the use of the proper grade of salt. Our water softener grades, by reason of their purity and uniformity, are the accepted standard for use in all types of Zeolite softeners.

We will gladly recommend the grade best suited to your particular type of equipment.

In requesting quotation please mention the type of softener that your plant is now using.

INTERNATIONAL SALT COMPANY, Inc.
475 Fifth Avenue, New York

Uncle Jake says



I have no time to quarrel with the mistakes of my past; there is a long road ahead of me.

I have learned from observation that the average man is as old as his worries and so I say, don't worry because of what you have lost in service and satisfaction by not using K.V.P. Bond Paper (for all printing, writing and typewriter uses) but see to it that from now on you will be served by nothing but the best in paper, viz. K.V.P. Bond.

Uncle Jake
of the
KALAMAZOO VEGETABLE PARCHMENT CO.
KALAMAZOO, MICHIGAN

New Papers

Writing—	
White rag	15-40
White sulphite	11-30
Colored rag	15-40
Colored Sulphite	10-30
Ledger—	
White rag	16-40
White sulphite	12-30
Colored sulphite	11-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	9-30
Colored sulphite	9-30
Colored rag	15-40
Book—	
No. 1 S. & S. C.	6.50-8.00
Machine finished	6.25- 8.00
English finished	6.25- 8.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	8.50-15.00
Newsprint—	
Rolls, contract	3.25- ....
Rolls, transient	3.50- ....
Sheets	3.75- 4.00
Side runs	3.00- 3.25
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.65- .75
No. 2 white, 24x36	.60- .70
No. 1 manila, 24x36	.60- .70
Kraft	.90- 1.00
Wrapping—	
No. 1 Kraft	6.00- 6.50
No. 2 Kraft	5.25- 5.50
Southern Kraft	4.75- 5.00
Boards—	New York and Chicago
Solid news	47.50-50.00
Straw	52.50-57.50
Plain chip	42.50-45.00
White coated chip	55.00-60.00
Manila coated chip	52.50-57.50
Binder's board	70.00-75.00

Chemical Pulp

(Continued from page 1085)

Bleached sulphite	4.00-4.75
Easy bleaching sulphite	3.20-3.40
Unbleached sulphite, No. 1 strong (news grade)	2.90-3.15
Unbleached sulphite, No. 1 book	3.25-3.50
Soda pulp, bleached	3.75-4.00
Mitscherlich, unbleached	3.25-3.50
Kraft, No. 1	2.85-3.10
Screenings, refined	1.40-1.60

Chemicals

Offerings of casein have increased and prices display a softer tone than has been noted in some time. In other words, it would appear as if the height of the market had been witnessed. Domestic casein is now quoted at 16 cents a pound upward, and the imported product at 17 to 18 cents, duty paid. Bleaching powder is steady in price at a range of 2 to 2.40 cents per pound at works, with the movement on contract of good volume. Caustic soda is firm quotably at 3.10 to 3.15 cents per pound in large drums for spot delivery, while soda ash quotations are maintained at 1.38 cents in bags f. o. b. works.

Average quotations are as follows:

Alum, lump ammonia	3.50- 3.75
Alum, lump starch	3.75- 4.00
Blanc fixe, powder	4.00- 4.25
Bleaching powder	2.00- 2.40
Brimstone (long ton, at mine)	18.00-19.00
Casein (duty paid)	17.00-18.00
Caustic soda, spot delivery	3.10- 3.15
China clay, domestic washed	8.00-10.00
China clay, foreign	13.00-20.00
Rosin, grade E	15.25-15.50
Satin white	2.00- 2.25
Soda ash, 58 per cent light (bags)	1.38- ....
Starch, papermakers', in bags	3.42- ....
Talc (ton)	16.00-18.00

Moisture Absorption Capacity of Different Fibers

The capacity of different paper fibers for moisture is the subject of a paper of great interest to large consumers as well as to paper manufacturers which appeared in *Zellstoff und Papier*, May, 1926, p. 201. The paper is entitled "Absorption of Moisture by Various Papermaking Fibers Under Different Atmospheric Conditions." It is well known that different types of papermaking fibers react toward atmospheric moisture at different rates and to different equilibria. The author of the present article, H. Fay, made comparative observations and these are presented in abstract form in British Chemical Abstracts as follows:

The fibers of the various half-stuffs were teased out, dried completely and exposed to atmospheres of various known relative humidities for twelve hours, after which the moisture absorbed was determined.

Under the conditions named, Mitscherlich sulphite pulp was found to absorb about 1 percent more moisture than a Ritter-Kellner pulp, while unbleached pulps of each type absorbed slightly more than the same pulps bleached.

The absorption of moisture by the fibers did not rise proportionately with the degree of saturation of the atmosphere.

The absorption of moisture by straw pulp was almost identical with that of unbleached Mitscherlich pulp, but aspen or poplar pulp, while behaving in the same way in atmospheres of low humidity, showed a remarkable increase when exposed to atmospheres above 70 per cent relative humidity, a value of 13.9 per cent being recorded on exposure to air at 80 per cent saturation.

The absorption of moisture by bleached linen showed a regular rise with increase of humidity but in no case was it so high as that of chemical woodpulp under the same conditions. For example, the moisture absorption of bleached chemical woodpulp registered 10.7, while bleached linen absorbed 9.6 per cent in air at 74 per cent saturation.

With esparto pulp the moisture was absorbed extremely slowly in atmospheres of low humidity (up to 50 per cent saturation) but became equivalent to that of chemical woodpulp in an atmosphere of 80 per cent saturation.

The variable response of the different fibers to atmospheric changes is reflected in the cockling of the paper in the printing plant, and the practice of separating and exposing the sheets by hanging them up in the press room for some hours before running them over the presses is an important precaution.

Mr. Daniel B. Morris of 131 State Street, Boston, has been apointed New England distributor of the products of the Security Rubber and Belting Company, Chicago, makers of "Serubco" Cushion Center Rubber Belting and Hose.

The B Q Inc. QUALITY PULPS

HAFSLUND NORWAY

"HAFSLUND BEAR"
Bleached Sulphite

F:HAGA

"FORSHAGA"
Bleached Sulphite

KRAFT HURUM NORWAY SPECIAL

"HURUM SPECIAL"
Extra Strong Kraft

KOOS BAC

"BAMBLE"
Extra Strong Kraft

The Borregaard Company
200 Fifth Ave. Incorporated New York, N.Y.

The Pulp and Paper Trading Co.
21 East 40th Street New York City

DEALERS IN DOMESTIC CHEMICAL AND MECHANICAL PULPS AND PAPER

AGENTS FOR
J. & J. Rogers Company, Ausable Forks, N. Y.
E. B. Eddy Company, Ltd., Hull, Canada

Canadian Kraft Limited, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp

Howard Smith Paper Mills, Montreal, Quebec
EASTERN AGENTS of Sulphite Pulp. Made by
Port Huron Sulphite & Paper Co., Port Huron, Mich.

J. ANDERSEN & CO.
21 East 40th Street New York City

Importers of Chemical Pulps
BLEACHED AND UNBLEACHED

Agents for Kellner Partington Paper Pulp Co., Ltd.
Sarpsborg, Norway; Forshaga, and Edsvalla, Sweden

Bleached and Unbleached
SULPHITES
KRAFT PULPS

Foreign and Domestic
GROUND WOOD

PERKINS-GOODWIN CO.
NEW YORK
33 West 42nd St.

PAPER

PRINTING PAPER
OF
EVERY DESCRIPTION

EXPORTS

The paper export trade of the United States appears to have fully recovered from the depression of the early post-war years and exports for the fiscal year ended June 30 last reached a total value of $25,177,842, which not only was 12 per cent larger than the previous year's shipments of $23,021,996, but also surpassed any previous year since 1921, according to the Paper Division of the Department of Commerce.

This high record during the past fiscal year was attained notwithstanding that the average export value of most classes of paper has shown a strong downward trend during the past twelve months. However, with few exceptions, exports during the last half of the fiscal year exceeded the preceding six months as well as the corresponding period in 1925. While nearly all classes contributed to the increased shipments in the past year, the heaviest proportionate gains occurred in writing, surface-coated, and greaseproof papers, boards, and a number of paper specialties, including towels and napkins, filing folders, and boxes and cartons. In addition to paper and boards and paper products, $5,655,618 worth of paper base stocks were shipped from the United States during 1925-26, an increase of nearly 15 per cent over the preceding year.

The volume of newsprint exports during the past fiscal year totaled 44,600,666 pounds, or 14 per cent above the preceding twelve months, although owing to the generally lower average export price the value of the shipments increased only 11 per cent, from $1,849,599 to $2,054,776. Exports of book paper, which have been declining for over a year, amounted to $1,791,-127 in the past fiscal year, a decrease of 13 per cent in comparison with the previous year. Exports of wrapping paper totaled 31,360,000 pounds, an increase of 4,485,000 pounds or 17 per cent over 1924-25.

One of the most important gains made by American paper exporters in the past fiscal year was in writing papers. Exports of this class reached a total of 7,320,000 pounds, or two and one-fourth times as great as the preceding year when the total was 3,253,714 pounds, and also exceeded the 1923-24 shipments by 36 per cent. Exports of paper boards recorded a big gain. Shipments of box board and straw board amounted to 76,007,000 pounds, or approximately 35 per cent more than in 1924-25.

Following are complete figures of exports of paper and paper products and paper base stocks from the United States in the fiscal year ended June 30, 1926, with comparative figures for the preceding twelve months:

Exports of Paper and Paper Products from the U. S.

Classes	1924-25 Quantity Pounds	1924-25 Value	1925-26 Quantity Pounds	1925-26 Value
Newsprint paper	39,046,251	$1,849,599	44,600,666	$2,054,776
Book paper, not coated	19,409,456	2,132,844	16,944,335	1,791,127
Cover paper	1,065,039	207,054	1,278,740	234,570
Greaseproof and waterproof paper	1,639,822	198,637	2,376,837	349,477
Wrapping paper	3,606,278	514,029	5,621,121	723,871
Surface-coated paper	26,876,463	2,087,060	31,360,394	2,232,926
Tissue and crepe	3,315,757	898,574	4,032,654	1,015,552
Toilet paper	4,746,644	567,917	4,814,482	589,384
Paper towels and napkins	1,314,694	214,910	1,936,610	282,258
Boxboard	a6,492,944	a242,951	40,957,021	1,259,750
Bristols and bristol boards	798,086	101,056	1,413,093	166,115
Other paper board and straw board	50,314,652	2,013,898	35,049,871	1,803,689
Sheathing and building paper	10,934,393	521,242	12,190,762	545,492
Wall boards of paper or pulp	b14,507,584	491,941	18,674,091	635,549
Blotting paper	2,695,123	319,120	3,291,008	412,941
Filing folders, index cards and other office forms	535,803	175,087	786,383	244,827
Papeteries	492,270	168,073	590,906	207,503
Other writing paper	3,253,714	546,217	7,320,367	1,253,570
Cigarette paper and books	523,357	165,483	515,907	132,639
Paper hangings	c24,643,636	612,542	22,317,249	559,428
Paper bags	11,727,290	1,010,433	12,335,644	1,102,215
Boxes and cartons	14,418,868	1,209,103	19,275,367	1,400,578
Envelopes	2,573,895	486,708	2,508,372	476,828
Vulcanized fiber in sheets, strips, rods, and tubes	4,813,347	1,478,725	5,841,959	1,724,622
Manufacturers of vulcanized and indurated fiber	434,341	193,580	434,662	160,907
Cash register and adding machine paper	1,435,134	150,000	1,746,380	181,445
Other paper and paper products	.....	4,464,544	.....	4,231,803
Total	.....	$23,021,996	.....	$25,773,842

a—Up to January, 1925, included under "other paper and straw boards."
b—Square feet.
c—Yards.

Exports of Paper Base Stocks from the U. S. Classes	1924-25 Quantity	1924-25 Value	1925-26 Quantity	1925-26 Value
Pulp wood ..... cubic feet..	847,405	$ 53,636	870,057	$ 62,179
Sulphite wood pulp ..... do..	22,233	1,308,620	21,754	1,427,953
Soda wood pulp ..... do..	2,085	197,150	3,281	242,575
Other wood pulp ..... do..	8,707	925,501	7,647	716,057
Rags and other paper stock ..... do..	66,312	2,473,763	84,368	3,206,854
Total	.....	$4,958,670	.....	$5,655,618

FOR ALL PAPERS—
A Fitchburg Felt

¶ For whatever paper you make, whether fine ledger or bond, book, or coarse paper, Fitchburg Felts give long and efficient service.

¶ Fitchburg Cotton Dryer Felts are made in two, three, four, five and six ply in English weave, from 60 to 210 inches in width.

¶ For over eighty years paper makers have bought Fitchburg Felts in full confidence, knowing that every ounce conforms to the highest standards of quality and workmanship.

¶ When next thinking of dryer felts, think of "Fitchburg."

FITCHBURG DUCK MILLS
ESTABLISHED 1844
54 Duck Mill Road FITCHBURG, MASS.

1864 1926

"Excelsior" Felts

For EVERY GRADE of PULP & PAPER

We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made *the first endless paper machine felts manufactured in America.*

Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.

KNOX WOOLEN COMPANY
CAMDEN, MAINE

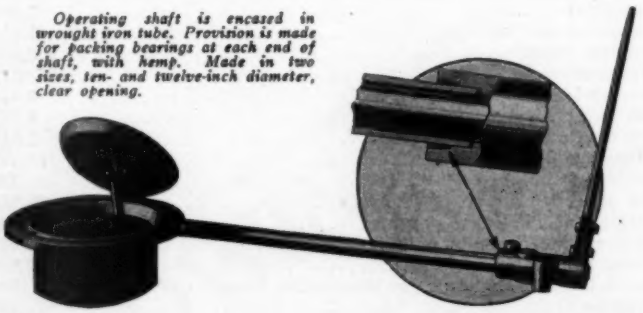
Sold by
BULKLEY, DUNTON & COMPANY
75-77 Duane Street, N. Y.
and direct

From the Outside—

No "fishing" and "poking" around the inside of the beater tub. This new dumping valve is constructed to operate **from the outside** of the tub. May be made either right or left hand by simply reversing two small bronze bushings.

Brass valve seat and lid are correctly proportioned. The valve in general is durable, easily operated and installed, and is positive in action.

Operating shaft is encased in wrought iron tube. Provision is made for packing bearings at each end of shaft, with hemp. Made in two sizes, ten- and twelve-inch diameter, clear opening.



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Technical Association Papers, Series VIII (1925)

In paper, 248 pages. $3 per copy

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IMPORTS

Wood Pulp

Imported wood pulp is in a firm market position. There is a very steady tone to quotations, offerings from abroad are limited—especially for shipment during the remainder of this year—and manufacturers in Europe are insistent on full quotod prices, seeming satisfied not to effect sales unless securing the rates named. Demand in the United States is fair. Consumers here are showing some hesitancy about buying for 1927 shipment from abroad, yet there has been an improvement in market activity during the last couple of weeks, and signs point to business of fairly large volume now going through.

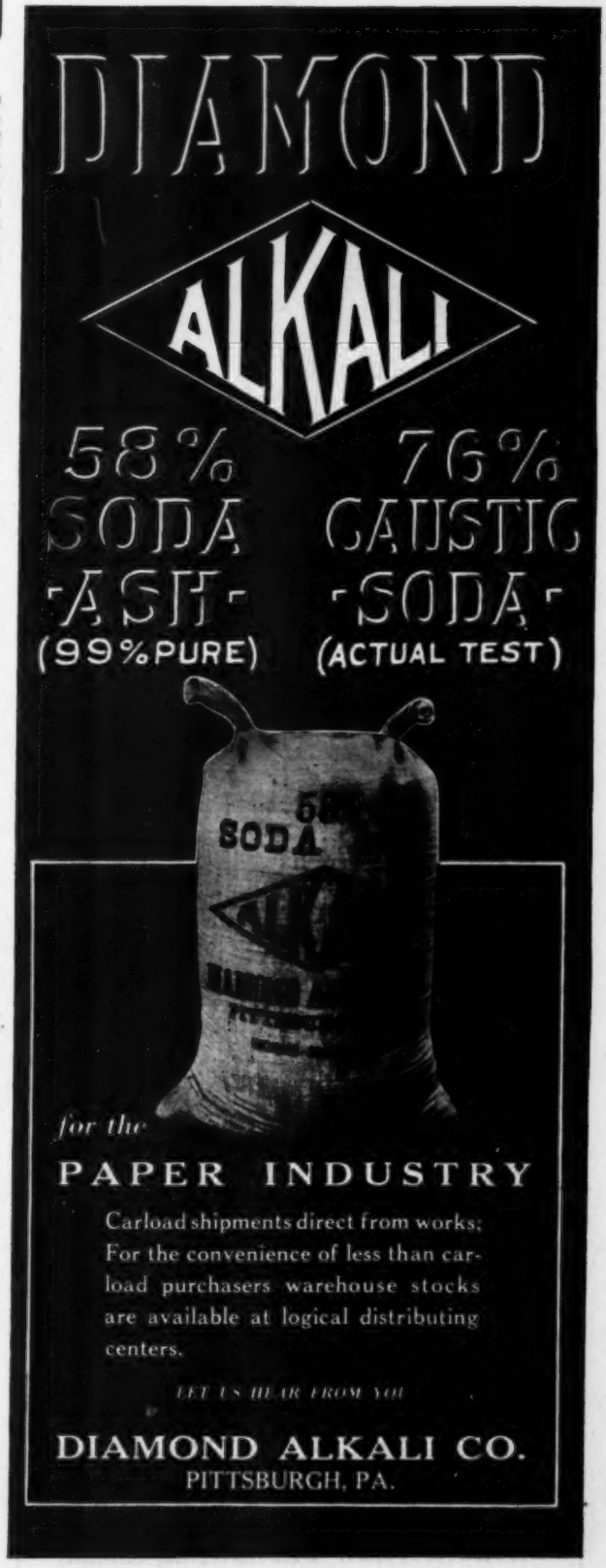
The strike in the Norwegian pulp and paper industry started as scheduled on August 16, when workers in the mills of that Scandinavian country quit their jobs in an effort to enforce their demands upon the manufacturers with regard to a new working agreement. Advices say that something like 13,000 hands in the wood pulp and paper plants are involved in the strike. The employers insist on a 27 per cent reduction in wages owing to the drop in the cost of living in Norway and the difficulty they have in manufacturing pulp and paper at a cost to compete in the world markets, whereas the emloyes are willing to negotiate on the basis of a 17 per cent cut in pay. The strike gives promise of being a long-drawn-out affair and if it is there is no question the effect on the wood pulp situation all over the world will be important. Consumers in the United States, England and in other countries have contracts for pulp with the Norwegian mills, and should they be unable to get commitments against these contracts the probabilities are they would have to go to other pulp-producing sources to secure supplies to cover their requirements. American consumers likely will look to Sweden and Canada to obtain necessary pulp, as will also buyers in England and elsewhere. This doubtless would make for a stringent condition since pulp mills in Sweden, Canada, Germany and Finland are well sold ahead, not alone for the balance of this year, but well into 1927, and probably would not be able to make up the loss of the Norwegian production.

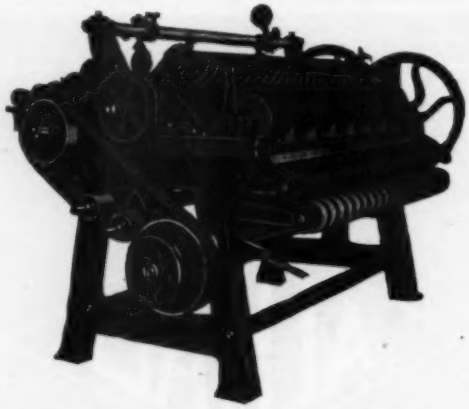
Importations of wood pulp into the United States continue on a big scale. In fact, receipts during the month of June, totaling 122,238 long tons of all grades of chemical pulp, were the largest in any month up to June this year, comparing with 95,132 long tons imported in May, and with 100,-382 tons in June, 1925. The big increase in June imports was caused by exceptionally large amounts of sulphite, both bleached and unbleached, received during that month. June imports brought the total for the first six months of the current year up to 599,031 long tons of chemical pulp, giving a monthly average of 99,838 tons. Imports of ground wood in June amounted to 23,274 long tons, against 17,078 tons in the preceding month, and 26,536 tons in June a year ago.

Current prices of bleached sulphite of prime quality range from a low point of about 3.65 cents a pound up to 4 cents and higher, as much as 4.25 to 4.50 cents being asked for some mill brands. Strong unbleached sulphite of prime grade is quoted at 3 to 3.10 cents generally, ex dock New York or other American Atlantic ports, with some of the extra strong brands held for 3.15 and 3.20 cents. Prime standard Swedish kraft is selling at 3 to 3.15 cents ex dock, and easy bleaching sulphite at 3.30 cents and higher. Scandinavian ground wood is quoted firmly at around $39 a ton for dry pulp on the dock at Atlantic ports.

Current market quotations ex dock New York and receipts at the port of New York during June follow:

Bleached sulphite, No. 1	3.65- 4.00
Unbleached sulphite, strong, No. 1	2.95- 3.20
Unbleached sulphite, No. 2	2.75- 3.00
Easy bleaching sulphite	3.25- 3.40
Mitscherlich unbleached, genuine	3.25- 3.50
Mitscherlich unbleached, ordinary	2.90- 3.10
Kraft, standard Swedish	2.95- 3.15
Ground wood, per ton (dry)	38.00-40.00





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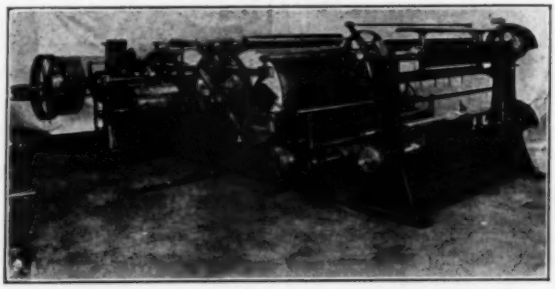

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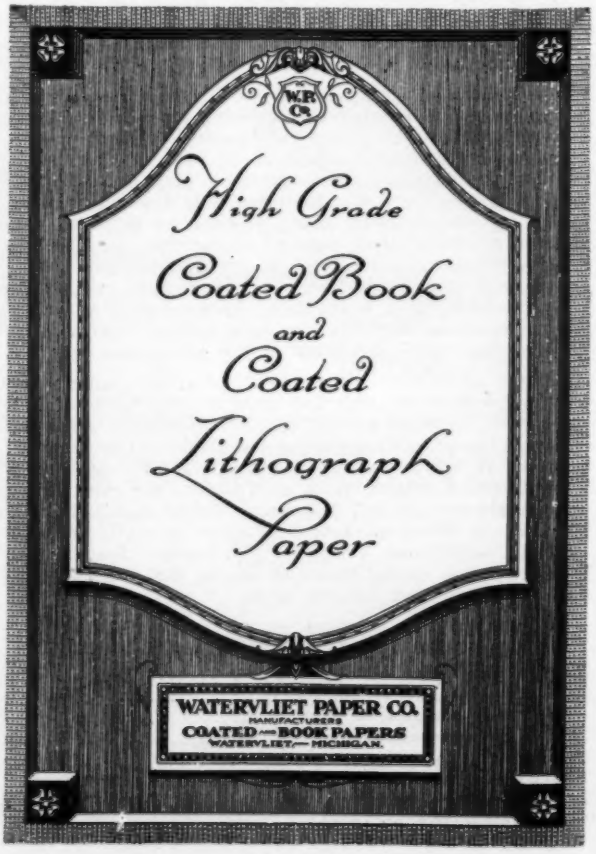

Castle & Overton, Inc., 2,259 bls. from Bremen, 190 Rotterdam and 1,219 Gothenburg; Irving Bank-Columbia Trust Co., 200 bls. from Bremen, 330 Rotterdam and 683 Hamburg; M. Gottesman & Co., 3,500 bls. from Sundsvall; Johaneson, Wales & Sparre, 2,875 bls. from Sundsvall, 2,790 Hernosand and 1,083 Gothenburg; Tidewater Paper Mills Co., 16,327 bls. ground wood from Liverpool, N. S., 9,123 Gaspe and 6,398 Botwood; Bulkley, Dunton & Co., 1,375 bls. from Sundsvall, 10,465 Konigsberg, 500 Iggesund, 3,625 Gfle, 1,350 Bremen and 3,875 Soderhamn; E. M. Sergeant Co., 598 bls. from Copenhagen, 6,300 Hernosand and 1,049 Gothenburg; American Exchange-Pacific National Bank, 1,000 bls. from Oslo; Chase National Bank, 1,850 bls. from Oslo; Chemical National Bank, 750 bls. from Oslo; J. Andersen & Co., 800 bls. from Iggesund, 1,825 Hamburg, 500 Hernosand, 375 Gothenburg and 900 Oslo; Pagel, Horton & Co., 2,250 bls. from Gefle and 12,000 Husum; Scandinavian Pulp Agency, 7,135 bls. from Skutskar, 1,651 Gothenburg and 5,575 Sundsvall; Daniel M. Hicks, Inc., 356 bls. from Hamburg and 600 Copenhagen; W. Hartmann & Co., 170 bls. from Hamburg and 33 Rotterdam; National City Bank, 3,092 bls. from Hamburg; Buck, Kiaer & Co., 3,600 bls. from Sikea; Philadelphia National Bank, 600 bls. from Sikea; Price & Pierce, 150 bls. from Sikea; Banca Commerciale Italiana, 335 bls. from Hamburg; Atterbury Bros., 1,055 bls. from Hamburg; Lagerloef Trading Co., 490 bls. from Kotka and 254 Gothenburg; Central Union Trust Co., 2,225 bls. from Oslo; Empire Trust Co., 225 bls. from Oslo and 3,750 Greaker; Goldman, Sachs & Co., 1,765 bls. from Hamburg; M. Gottesman & Co., 20,082 bls. ground wood from Sheet Harbor, N. S.; Order, 30 bls. from Oslo, 1,280 Hamburg, 4,060 Konigsberg, 4,706 Wiborg, 1,950 Kotka and 1,404 Raumo.

Paper Stock

Imports of papermaking materials other than wood pulp into the United States keep on a fairly large scale. With the possible exception of miscellaneous paper stock, receipts during August were up to an average or somewhat larger, judging from the arrivals through the port of New York during that month. There were good-sized imports of rags, while receipts of old rope and old bagging were relatively as large.

Imports of papermaking rags into this country during the Government's fiscal year ended June 30 last totaled 523,159,824 pounds, valued at $12,998,686, showing a decline from the 581,857,187 pounds of a value of $15,560,655 imported in the previous twelve months. Imports of old bagging and old paper stock in the same period were 132,396,441 pounds, against 117,440,533 pounds in the preceding year, while imports of old rope and miscellaneous paper stock totaled 81,095,121 pounds, compared with 81,724,037 pounds in the previous year.

Imports of all kinds of paper stock through the port of New York in the month of August, 1926, these data being taken from manifests of steamers arriving at that port during the month, follow:

Old Rope

Brown Bros. & Co., 566 coils and 584 bls.; National City Bank, 337 bls.; Daniel I. Murphy, Inc., 43 coils; Ellerman's Wilson Line, 176 coils; William Schall & Co., 196 bls., 99 rolls and 36 coils; S. Birkenstein & Sons, 112 coils; A. W. Fenton, Inc., 2 bls.; Stone Bros. Co., 168 coils and 6 bls.; Castle & Overton, Inc., 66 bls.; Anglo-South American Trust Co., 52 coils; Bulkley, Dunton & Co., 38 bls.; Central National Bank of Cleveland, 61 coils; International Purchasing Co., 93 bls. and 61 coils; Irwin-Harrison-Whitney, Inc., 61 coils; Victor Galaup, Inc., 7 bls.; Order, 192 bls. and 121 coils.

Old Bagging

Grace National Bank, 145 bls.; National City Bank, 1,800 bls.; Chase National Bank, 203 bls.; Chemical National Bank, 40 bls.; Stone Bros. Co., 72 bls.; Central National Bank of Cleveland, 201 bls.; Irving Bank-Columbia Trust Co., 100 bls.; Bulkley, Dunton & Co., 315 bls.; Royal Manufacturing Co., 290 bls.; J. M. Johnson, 113 bls.; Vacuum Co., 71 bls.; Chatham & Phenix National Bank, 120 bls.; Rudolf Wolf, 15 bls.; Angelo-South American Trust Co., 1,226 bls.; J.

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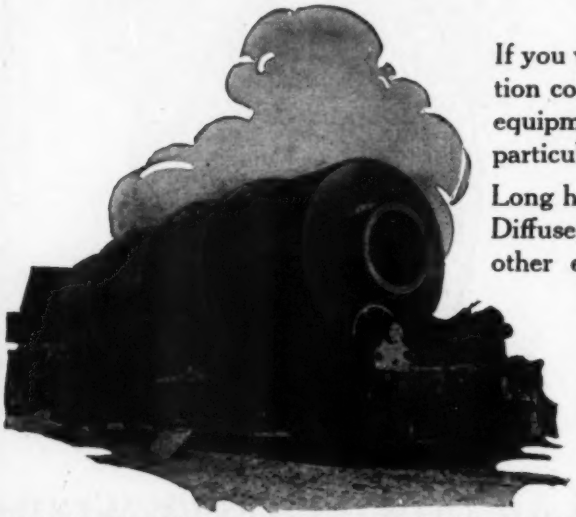

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Cohen, 40 bls.; L. H. Abenheimer, 54 bls.; Whaling Waste Products Co., 25 bls.; Carolina Bagging Co., 552 bls.; Acme Burlap Bag Co., 98 bls.; E. J. Keller Co., 354 bls.; Amsinck, Sonne & Co., 80 bls.; A. W. Fenton, Inc., 4 bls.; Fulton Bag & Cotton Mills, 187 bls.; Order, 360 bls.

Rags

A. H. Searle, Inc., 550 bls.; Castle & Overton, Inc., 280 bls.; William Steck & Co., 164 bls.; Romeo Canovai & Figli, 9 bls.; E. Mayer, 253 bls.; Robert Blank, 462 bls.; Stone Bros. Co., 983 bls.; General Fiber Co., 33 bls.; Atlas Waste Mfg. Co., 691 bls.; Victor Galaup, Inc., 352 bls.; Bulkley, Dunton & Co., 624 bls.; Daniel M. Hicks, Inc., 80 bls.; Paul Berlowitz, 90 bls.; Atterbury Bros., 771 bls.; Albion Trading Co., 19 bls.; I. Hinerfeld, 31 bls.; J. C. Van Lyallie & Co., 42 bls.; Milton Snedeker Corp., 37 bls.; Daniel I. Murphy, Inc., 257 bls.; George W. Millar & Co., 450 bls.; S. Silberman Co., 678 bls.; I. Cohen & Co., 127 bls.; Marx Maier Paper Mill Supply Corp., 207 bls.; American Wool Stock Co., 136 bls.; Royal Mfg. Co., 90 bls.; S. Schapiro & Sons, 270 bls.; Sterling Mill Supply Co., 160 bls.; E. J. Keller Co., 1,643 bls.; Equitable Trust Co., 2,269 bls.; Bank of New York & Trust Co., 9 bls.; Chase National Bank, 826 bls.; Virginia National Bank, 55 bls.; Anglo-South American Trust Co., 125 bls.; Central National Bank of Cleveland, 478 bls.; Chemical National Bank, 585 bls.; Corn Exchange Bank, 10 bls.; National City Bank, 290 bls.; State Bank, 113 bls.; American Exchange-Pacific National Bank, 155 bls.; National Bank of Commerce, 362 bls.; Bowery & East River National Bank, 219 bls.; Irving Bank-Columbia Trust Co., 48 bls.; A. W. Fenton, Inc., 1,606 bls.; Amsinck, Sonne & Co., 165 bls.; The Barrett Co., 459 bls.; Goldman, Sachs & Co., 431 bls.; Brown Bros. & Co., 439 bls.; Order, 4,219 bls.

Miscellaneous Paper Stock

Equitable Trust Co., 493 bls.; Brown Bros. & Co., 50 bls.; National City Bank, 72 bls.; Chase National Bank, 11 bls.; Atlantic Transport Co., 26 bls.; Anglo-South American Trust Co., 273 bls.; Milton Snedeker Corp., 115 bls.; Bank of New York & Trust Co., 181 bls.; J. Cohen & Sons, 19 bls.; Whaling Waste Products Co., 47 bls.; E. Butterworth & Co., 332 bls.; Maurice O'Meara Co., 181 bls.; E. J. Keller Co., 120 bls.; Order, 1,942 bls.

Paper

Imports of paper into the United States during August, judging from unofficial data, continued on a par with the several previous months, although it appears probable there was a slight falling off in some classes. Newsprint receipts were fairly large, and there were considerable shipments of cigarette, hanging, photo and other kinds received, whereas wrapping paper arrivals were smaller.

Total imports of paper of all kinds from all sources into the United States during the twelve months ended June last, according to official Department of Commerce statistics, reached a value of $127,165,998, compared with imports to the value of $117,486,821 in the preceding year. Newsprint, of course, comprised the bulk of these imports, receipts of this class of paper in the fiscal year ended June last totaling 3,216,639,420 pounds, valued at $111,374,856, against 2,815,072,939 pounds of a value of $102,089,345 in the previous year.

Imports of paper of all kinds through the port of New York during August, these data being taken from manifests of steamers arriving at that port last month, follow:

Printing

Bank of Montreal, 12,419 rolls from Corner Brook, N. F.; Keuffel & Esser Co., 225 rolls from Hamburg; P. C. Zuhlke, 33 cs. from Antwerp; F. L. Kraemer & Co., 3 cs. from Southampton and 4 cs. from London; C. B. Richard & Co., 48 bls. from Hamburg; Oxford University Press, 10 cs. from Liverpool; B. F. Drakenfeld & Co., 79 cs. from Liverpool; Parsons & Whittemore, 456 reels from Bremen and 1,200 reels Wiborg; H. Reeve Angel & Co., 216 reels and 144 bls. from Bremen; A. S. Zabriskie, 184 reels from Bremen; E. Dietzgen & Co., 58 cs. from Hamburg and 80 cs. Rotterdam; William Hartmann & Co., 215 bls. from Hamburg;

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Perry, Ryer & Co., 190 cs. from Glasgow; Perkins-Goodwin Co., 120 cs. from Hamburg; Steiner Paper Corp., 43 cs. from Rotterdam; Maurice O'Meara Co., 218 bls. from Bremen; Martin & Bechtole, 11 cs. from Bremen; J. P. Heffernan Paper Co., 7 bls. from Hamburg and 11 cs. Rotterdam; Irving Bank-Columbia Trust Co., 382 bls. from Hamburg; Public National Bank, 13 cs. from Marseilles; P. Puttmann, 30 cs. from Antwerp; Hudson Trading Co., 30 rolls from Hamburg; Order, 926 reels from Bremen, 687 reels Kotka and 283 rolls London.

Wrapping

F. C. Strype, 19 cs. and 13 rolls from Antwerp; Schenkers, Inc., 4 cs. from Hamburg; Steffens, Jones & Co., 28 cs. from Rotterdam; Robert Wilson Paper Corp., 19 cs. from Glasgow; D. S. Walton & Co., 18 reels from Gothenburg; C. K. MacAlpine & Co., 88 bls. and 62 cs. and 356 rolls from Gothenburg; Arkell Safety Bag Co., 884 rolls from Gothenburg; Miller Paper Co., 60 rolls from Gothenburg; Thomas Barrett & Son, 50 bls. from Hamburg; Fidelity Trust Co., 418 rolls from Hamburg; Bendix Paper Co., 5 cs. from Hamburg; C. Steiner, 5 cs. from Hamburg; Universal Paper Co., 33 bls. and 365 rolls from Gothenburg; Borregaard Co., 524 bls. and 28 rolls from Gothenburg; Order, 5 bls. from Rotterdam and 9 cs. from Gothenburg.

Cigarette

Standard Products Corp., 586 cs. from Havre; American Tobacco Co., 1,300 cs. from Bordeaux; R. J. Reynolds Tobacco Co., 1,480 cs. from St. Nazaire; De Manduit Paper Corp., 334 cs. from St. Nazaire; Dollar Steamship Line, 51 cs. from Marseilles; P. J. Schweitzer, 78 cs. from Havre and 46 cs. from Marseilles; S. Alexander, 2 cs. from Southampton; Surburg Co., 42 cs. from Havre; British-American Tobacco Co., 55 cs. from Havre; Suarez & Crespo, 5 cs. from Alicante; Southern Pacific Line, 3 cs. from Southampton; Bank of the Manhattan Co., 30 cs. from Lisbon; M. Spiegel & Son, 18 cs. from Genoa; Order, 3 cs. from Barcelona.

Writing

E. Ditezgen & Co., 4 cs. from Marseilles; Guibont Freres & Co., 22 cs. from Southampton and 4 cs. from Havre; D. C. Andrews & Co., 3 cs. from Havre; F. C. Strype, 7 cs. from Southampton; Distinctive Writing Paper Co., 4 cs. from Southampton; Eleto Co., 11 cs. from Southampton and 4 cs. from Liverpool; A. Flinn & Co., 6 cs. from Southampton; Coenca-Morrison Co., 8 cs. from Havre; Stern Bros., 28 cs. from Hamburg; W. J. Byrnes & Co., 16 cs. from Havre; Order, 23 cs. from Trieste and 34 cs. from Rotterdam.

Drawing

H. Reeve Angel & Co., 3 cs. from Southampton and 11 cs. from London; Keuffel & Esser Co., 96 cs. from Hamburg and 3 cs. from London; Favor, Ruhl & Co., 5 cs. from Southampton.

Filter

H. Reeve Angel & Co., 3 cs. from Southampton and 29 cs. from London; J. Manheimer, 83 bls. from Southampton; C. Sleicher & Schull Co., 15 cs. from Hamburg; E. Fougera & Co., 57 cs. from Southampton.

Tissue

Hormann, Schutte & Co., 7 cs. from Genoa; F. C. Strype, 30 cs. from Liverpool; F. L. Kraemer & Co., 3 cs. from London; S. Gilbert, 31 cs. from Rotterdam; Iwai & Co., 4 cs. from Kobe; Wilkinson Bros. & Co., 14 cs. from Genoa.

Hanging

C. A. Haynes & Co., 36 bls. from Southampton and 33 bls. from London; R. F. Downing & Co., 5 bls. from Southampton and 3 cs. from Havre; A. C. Dodman, Jr., Inc., 3 bls. from Antwerp, 8 cs. from Southampton and 9 bls. from Liverpool; G. J. Hunken & Co., 7 bls. from Hamburg; W. H. S. Lloyd & Co., 27 bls. from Liverpool; F. J. Emmerich & Co., 6 cs. from Bremen, 2 bls. from Liverpool, 3 bls. from London and 15 bls. from Hamburg; Bendix Paper Co., 24 cs. from Hamburg; Meadows, Wye & Co., 5 cs. from London and 305 rolls from Hamburg; Panama-Pacific Line, 4 cs. from London; C. Grimmer & Son, 4 cs. from Hamburg; Order, 28 cs. from London.

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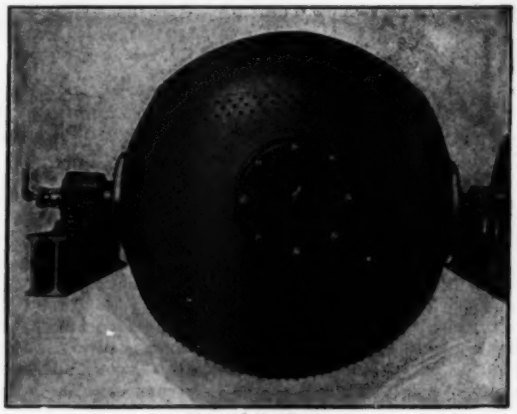

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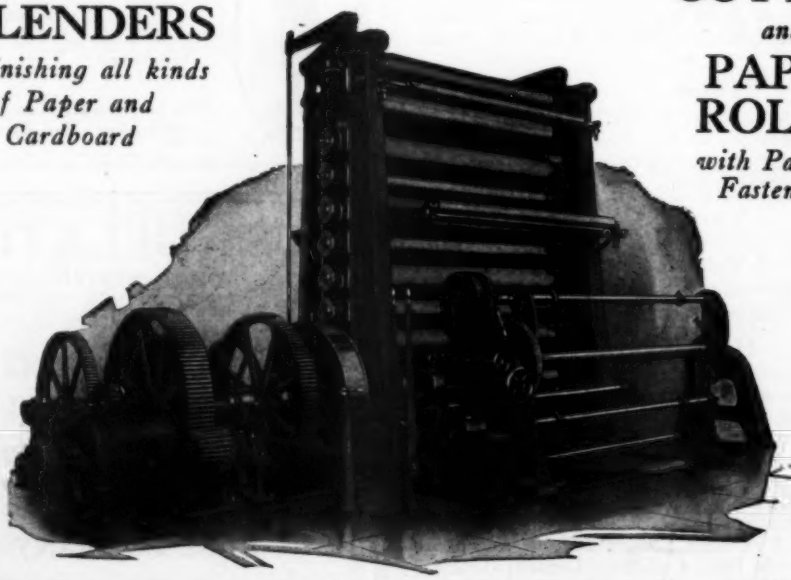

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